University of Chester

A comparison of physical store versus online grocery shopping habits based on consumers' environmental characteristics.

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~CONTENTS~

~ABSTRACT~

***Background*:** In the world today, consumers are surrounded by technologies that promise to redefine the way that they interact and shop. There is increasing interest in understanding the effects of computer mediated shopping environments. The internet was commercially born in the 1990s and it was widely seen as only an electronic communication media. During those years, the uptake of online grocery services was slower than anticipated and still in the early stage of e-grocery. In terms of e-grocery shopping, some of the main factors that influence consumer's choice not to shop online for groceries are delivery charges, time available for shopping, less enjoyment, lack of internet access, barrier to social aspect and issues surrounding privacy and security.

Food shopping practices are an important aspect of balanced diet. Evidence shows that local food environment and community nutrition environments (e.g. availability, cost, quality, etc.) significantly influence people's food shopping decisions as well as long term health. Furthermore, a variety of micro-environments (e.g. schools, workplaces, homes, restaurants, etc.), macro-environments (e.g. food industry, government, societal attitudes, etc.), the level of education and the socioeconomic status have an important influence on people's food shopping decisions too.

***Aims*:** The aim of this study is to compare online with in-store grocery shopping in terms of consumers' environmental characteristics and food shopping habits.

***Subjects & Setting*:** A total of **n**= 101, 84 women, 17 male, from age range 18-74 years, from 54 in-store and 47 the online participants were recruited at Wigan town centre (Manchester).

Methods: A descriptive cross-sectional survey design was used to collect data retrospectively at a single time point to compare whether regular grocery shoppers who buy online significantly differ in terms of environmental characteristics and grocery shopping habits to consumers who buy in store. The research design used two different locations for this study, Wigan town centre and the hair salon (Celly's hairstyle international) which is based in Wigan town centre. People who were in the hair salon while waiting for service were asked to participate in the study.

The data was collected at different times of the day on different days and weekends in order to maximize the diversity of respondents. Institutional review board approval was obtained from the University of Chester (March, 2010) and permission was sought from the hair salon owner (March, 2010) [**Appendix 5**].

***Results*:** The results obtained in this study showed that there was no variation between the online and the physical store participants in relation to environmental characteristics when shopping for food/groceries. However, even so, just under ¾ of all participants "use-re-useable carrier bags" (**71.3%**), "buy free range food" (**63.4%**), "buy local products" (**59.4%**), "buy fair trade" (**41.6%**), "buy organic food" (**29.7%**) and finally "avoid buying food that is not in season" (**8.9%**) were considered as environmental issues when shopping for food/groceries.

However, those aged range "35-54", higher educated, who work "full-time", live with "2" and "3" people in household are more engaged with issues relating to shopping behaviour.

***Conclusions*:** Overall this study result shows that are no significant associations between the food shopping habits, between the environmental characteristics who buy food/groceries via internet to those consumers who buy in the store. However, significant associations were found between socio-demographic features in relation to environmental issues (e.g.

organically produced, free range, food miles, seasonality of food) as well as economic issues (e.g. price, special offers, quality of food, brand name). Participants from age range “35-54” or older, highly educated, who work “full time”, live with “2” and “3” people household were more concerned about environmental and economic issues when shopping for food/groceries compared to youngest aged “18-24”, the least educated, who were “unemployed”, those with “5” or “5+” people in their household.

~DECLARATION~

This work is original and has not been previously submitted in nutrition of a Degree, qualification or other course'

Signed: ----------

Dated: ----------

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~ABBRIVEATIONS~

CO2	**Carbon Dioxide**
CVD	**Cardiovascular Disease**
FR	**Forrester Research**
FAS	**Food Standard Agency**
GM	**Genetically Modified**
GHG	**Greenhouse Gas**
LAS	**Laboratory Analogue Study**
N	**Number**
ONS	**Office for National Statistics**
Q	**Questionnaire**
Raine	**A Recent Western Australian Pregnancy Cohort Study**
SES	**Socioeconomic Status**
SDC	**Sustainable Development Commission**
SPSS	**Statistical Package for Social Sciences Program**
TAPHO	**The Association for Public Health Observatories**
TPB	**Theory of Planned Behaviour**
UK	**United Kingdom**
USA	**United States of America**

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~INTRODUCTION~

Chapter 1:

1.1. Background

Over the last few decades researchers have investigated the association between food shopping habits, food environments and diet related health outcomes (French, Wall, Mitchell, Shimotsu & Welsh, 2009; Creel, Sharkey, Mclntosh, Anding & Huber Jr, 2008). Studies have demonstrated that purchasing decisions and consumers behaviour can differ by the environmental characteristic of the consumers such as socioeconomic position, demographic, ethnic composition, psychological, personal differences, household composition and the education level of the household (Beaulac, Kristjansson & Cummins, 2009; Sharkey, Horel, Han & Huber, 2009; Elmadfa, 2009). Food shopping habits play an imperative part in investigations because it may be an important influence on individual energy intake, dietary and behaviour characteristics in relation to excess weight gain and obesity (Knai, Pomerleau, Lock & McKee, 2006; Martin, Howell, Duan & Walters, 2006). Overweight and obesity are becoming a major public health concerns globally (Borgmeier & Westenhoefer, 2009). With rapid increases in type 2 diabetes, hypertension, hypercholesteromia, cardiovascular disease (CVD) and some cancers, there is need for an understanding of peoples' food shopping habits and how this influences dietary patterns (Borgmeier & Westenhoefer, 2009; Elmadfa, 2009). Numerous studies show that increased fruit and vegetable consumption, reduced saturated fat and salt intake together with regular physical activity are effective in the prevention of diet related diseases (Neville, O'Hara & Milat, 2009; Knai et al. 2006). Moreover, in the last decade, food preference has gained more attention by the health promotion and education campaigns that aimed to disseminate dietary guideline messages (Levy, 2009). These campaigns aimed to promote the general public to make healthy food choices when shopping for food which is comparatively high in fibre (e.g. wholegrain foods, fresh fruit and vegetables), low in fat, salt and sugar (Levy, 2009).

Furthermore, the identification of consumers' food shopping habits and environmental characteristics provide useful information in understanding the food shopping habit in households

and their unwillingness to change to sustainable food choices (Wiig & Smith, 2008). A recent report (2009) conducted by House of Commons emphasises the need to fundamentally reduce the greenhouse gas (GHG) emissions that is produced by the food system through the production methods to the consumption point. For example, reducing energy input by shopping over the internet, cooking and storing food in energy conserving ways, reducing food waste, drinking filtered tap water instead of bottled water and so on. All of these have implications in terms of energy use and pollutants (UK Sustainable Development Commission (SDC), 2009). According to Sustain Data, a typical British four-member family emits the following emissions 4.2 tonnes carbon dioxide (CO2) from their homes, 4.4 tonnes CO2 from their car and 8 tonnes CO2 from the processing, packaging and distribution of their food (Rigby & Bown, 2003).

1.2. Grocery store shopping

Grocery store shopping constitutes an essential and routine type of consumer behaviour. In-store shopping is influenced by many factors including range of product, brands, promotion, store location, product heritage, (e.g. being genetically modified free (GM), organic, free range) point of purchase information, store environments, socioeconomic status [SES] (Turrell & Kavanagh, 2005), family size/type (e.g. number of adults and children in the household), who goes shopping and prepares foods at home, ethnicity, demographic, animal and human right issues, time (e.g. opening hours) and type of store (Megicks, Memery & Jasmine, 2008; Mattila & Wirtz, 2001; Morland, Wing & Roux, 2002). A study shows that food store shopping has been regarded as the least enjoyable household task, tedious and as a chore (Yoo, Baranowski, Missaghian, Baranowski, Cullen, Fisher et al. 2005). On the other hand, a research conducted by Ramus and Nielsen (2005), used the theory of planned behaviour (TPB) method to investigate in depth the range of knowledge held by consumers about internet shopping and online grocery shopping in particular. Respondents indicated that a shopping trip to the supermarket is often seen as a social aspect for family and friends to meet other

people and do something together. This aspect is lacking in online shopping as well as it being less fun (Ramus & Nielsen, 2005). Wiig and Smith (2008) have indicated that family personal preferences (likes and dislikes), economic and environmental situations significantly influenced low-income women's grocery store shopping behaviour in the USA. Similarly, in 2005, Yoo et al. found that socioeconomic position, ethnicities, educational level and household size dominated both the grocery store shopping patterns and the frequency of grocery store shopping in the USA.

Furthermore, in the last two decades, the supermarket industry has become increasingly competitive and consumers have gone from the traditional corner shops to an enormous variety of grocery store alternatives [e.g. hypermarket, discount store, convenience store, specialty retailer, online supermarkets] (Pettersson, Olsson & Fjellstrom, 2004). As a result this has been a proliferation of a variety of product, brand, pricing formats, store design, quality, physical appearance, packaging, cash point, petrol station, costumer facilities and services, reputation of retailer, polite and friendly staff that influence consumers' food shopping decisions (Megicks et al. 2008; Pettersson et al. 2004; Vranesevic & Stances, 2003). For instance, the laboratory analogue study (LAS) shows that purchases of both less healthy foods and healthy foods decreased as their price increased (Epstein, Dearing, Paluch, Roemmich & Cho, 2007). However, Kerin, Jain and Howard suggest (2001) that store shopping experience is more effective than a consumer's interaction with a store's physical surrounding and merchandise price. An empirical study by the Morschett, Swoboda and Foscht (2005) conducted in Germany with 560 grocery store shoppers investigating the role of shopping motives in relation to retail stores and the perception of store attributes found that consumers vary in their attitude towards the grocery store according to their motives (Epstein et al. 2005). Those studies showed that the heterogeneous behaviour of consumers may also influence grocery shopping pattern.

1.2. Online grocery shopping

In the world today, consumers are surrounded by technologies that promise to redefine the way that they interact and shop (Teo, 2006). There is increasing interest in understanding the effects of computer mediated shopping environments (Teo, 2006). The internet was commercially born in the 1990s and it was widely seen as only an electronic communication media (Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch et al. 2009). During those years, the uptake of online grocery services was slower than anticipated and still in the early stage of e-commerce (Yrjola, 2001; Huang & Oppewal, 2006). In terms of e-grocery shopping, some of the main factors that influence consumer's choice not to shop online for groceries are delivery charges, time available for shopping, less enjoyment, lack of internet access, barrier to social aspect and issues surrounding privacy and security (Huang & Oppewal, 2006).

However, when compared with in-store shopping, online shopping offers greater convenience by making shopping possible from anywhere, at anytime, with competitive prices, saving time, convenience, reduce food miles, providing broad choice and it gives access to a large range of stores (Boyer & Hult, 2005). Also, e-grocery service can actually be much cheaper compared to the current costs of customers visiting the store using their own car and spare time (Punakivi & Saranen, 2001). However, despite these factors most consumers continue to do their shopping in stores (Tanskanen, Yrjola & Holmstrom, 2002). According to Mindali and Salomon (2007) price, large distance, lack of time and car are the main reasons for e-grocery shopping costumers. The study further suggested that better educated and higher income consumers were more likely to shop online for both time savings reasons and the convenience aspects. Other benefits from the online shopping mentioned by the respondents include greater accuracy, a more peaceful experience, better ability to monitor total spending and better planning (Mindali & Salomon, 2007). Furthermore, over the last two decades many researchers have been concerned about the environmental, social and health costs of the domestic road transport to supermarket (Pretty, Ball, Lang, & Morison, 2005). For example,

domestic shopping transport to carry food from shop to home is estimated to the £ 2.91 per person per week (11.8% more than the price paid), various environmental costs (e.g. congestion, infrastructure), climate change (from GHG) and harm to health [e.g. noise, asthma] (Pretty et al. 2005).

Nevertheless, in the last few decades, the way consumers shop has considerably changed and besides shopping at the physical store, online shopping is receiving more attention. **Table 1** shows how most of household food shopping is done in the UK (Food Standard Agency (FSA), 2007).

Table 1: Shows how most of household food shopping is done (2006) in the UK (FSA, 2007)

	England	**Scotland**	**Wales**	**Northern Ireland**
	(1225) %	(605) %	(611) %	(592) %
Large supermarket	62	61	75	67
Supermarket chain local shops	31	33	18	22
Small grocery stores or corner shops	2	2	2	8
Local specialist shops	2	1	2	2
Over the internet	2	2	1	1

Food shopping continues to be dominated by physical store shopping and majority of the UK population still use large supermarkets (63%), followed by local supermarket chains and only a small minority (2%) of UK respondents used the internet (FSA, 2007).

On the other hand, more British food shoppers have converted to online grocery shopping than in any other countries (FSA, 2007). The UK grocery store Tesco is the world's biggest internet grocer and also the most successful online grocery retailer in the UK (VERDICT, 2009). Most importantly, the Forrester Research (FR) predicts that online grocery sales in Europe and USA will increase significantly (Asdemir, Jacob & Krishnan, 2009). In particular, higher and intermediate managerial professionals were more likely to use the internet as well as other sources for grocery shopping

including specialist shops, farmers market and farm shops compared to low-socioeconomic groups (FSA, 2007; Cude & Moranosky, 2000).

Online grocery shopping is one of the fastest growing online industries and numerous studies on this topic focus on the advantages and disadvantages; including consumer motivation, satisfaction and intention towards internet-shopping (Kervenoael, Soopramanien, Hallsworth, & Elms, 2007; Huang & Oppewal, 2006; Keh & Shieh, 2001). Also, there is an increasing trend for traditional supermarkets to go online. Although online-grocery shopping can be a good service for the homebound, elderly/disabled households with various resource constraints and single parents, as they can participate in the shopping experience (Keh & Shieh, 2001).

1.3. Food shopping habits

The selection of food by human groups is influenced by a number of factors that is established during childhood into adulthood (Fieldhouse, 1988, pp. 4-8). These factors include cultural, religious, socio-economic, geographical regions, educational, family, intrinsic, extrinsic, biological, physiological, psychological and personal aspects [e.g. the level of exception, priority, familiarity, influence of other people, individual personality, appetites, moods, emotions and eating disorders] (Wiig & Smith, 2008; Story & French, 2004; Essoo & Dibb, 2004; Fieldhouse, 1986, pp. 4-8). However, within this framework, people also form strong stable likes and dislikes for foods (Russell & Worsley, 2007). For example, a systematic review commissioned by FSA indicated that parents' eating habits and their attitudes play an important part to establish future consumers' food shopping habits (Hastings, Stead, McDermott, Forsyth, Mackintosh, Rayner et al. 2003). Similarly, Fieldhouse (1986, pp. 4) argues that the primary socialisation, in which a child is influenced by the immediate family and this influence is dependent upon the adults for their food shopping habits. He continued, those

habits also established at this stage are long lasting and resistant to change. Most importantly, family members and the environments not only shape the food purchase of future adults but these also play an important part of their nutrition knowledge (Pettersson, Olsson & Fjellstrom, 2004). Therefore, it is very important to develop sound balanced diet practices at this stage.

Patrick and Nicklas (2005) underlined that the social environments such as the educational status of individual/parents and nutrition education, play a crucial part in influencing food shopping habits of young children. Although, the study indicated that adult's food purchasing behaviour may be influenced by price, odour, appearances, method of preparation, digestibility, ease of eating and familiarity, all of those being important (Turrell, Bentley, Thomas, Jolley, Subramanian & Kavanagh, 2009).

1.5. Food shopping habits and socio-economic status

Various studies show that SES affects different people's food shopping habits and purchases of healthy foods will be different amongst each socioeconomic group (Lawrence & Barker, 2009; Turrell et al. 2009). These groups are mainly influenced by structural material, income, education and culture (Deshmuch-Taskar, Nicklas, Yang & Berenson, 2007). For example, low-income groups are generally minimally educated and respondents vary according to welfare (Lawrence & Barker, 2009). Therefore, they are the least likely to prefer foods that are consistent with dietary guideline recommendations (Lawrence & Barker, 2009; Turrell et al. 2009). This group also has higher overweight, obesity, mortality and/or morbidity rate of diet related disease (Lawrence & Barker, 2009; Skidmore et al. 2009). Their knowledge about health and food are due to limited understanding of interrelationships between food, nutrition and diseases (Petrovici & Ritson, 2006). Most recent research conducted by Turrell et al. (2009) investigated the association between SES and purchasing for grocery food in Melbourne city, Australia. The study concluded that disadvantaged areas have poorer availability, accessibility and affordability to a healthy diet

compared to advantaged areas (Turrell et al. 2009). Another, study also shows that household from economically disadvantaged and poor educational qualifications are less likely to purchase grocery food that are high in vitamins, minerals and fibre than their higher status counterparts (Turrell, Hewitt, PattersoN, Oldenburg & Gould, 2002). There is good evidence that food shopping habits of people in the lowest category of occupation consume a more unhealthy diet compared to people in the highest category according to meta-analysis (Lopez-Azpiazu, Sanchez-Villegas, Johansson, Petkeviciene, Prattalas & Martinez-Gonzalez, 2003).

1.6. Food shopping habits and geographical region

A systematic review indicated that the system of food provision has a major impact on what people choose to eat and clearly individuals can only choose foods that are available, accessible and affordable to them (Kamphuis, Giskes, Bruijn, Wendel-Vos, Brug & Lenthe, 2006). Recent review conducted by Hosler, Rajulu, Fredrick and Ronsani (2008) in New York shows that the geographical regions play an important part on food shopping habits. Their study shows that the urban majority of people have lack of access to fresh fruit and vegetables compared to the rural community. This result is supported by research reported by Moore, Roux, Nettleton and Jacobs-Jr (2008) the effects of local food environments (the number of supermarkets in the areas in which study participants live) on diet. The study shows that participants who had in the highest category of supermarket density and live in the best ranked neighbourhoods have a healthier diet than who had no supermarket near their homes and had the worst ranked healthy food availability (Moore, Roux & Brines, 2008a; Skidmore, Welch, Sluijs, Jones, Harvey, Harrison et al. 2009). This conclusion is supported by research reported by Bromley and Thomas (2002) who state that retail decentralization in town centre a has negative influence on grocery shopping behaviours of consumers especially disadvantaged, elderly and people who do not drive. As a result their food shopping behaviour and nutrient intake fluctuated.

1.7. Food shopping habits and environmental factors

According to the systematic review, the extrinsic factors such as environmental situational, advertising, promotion and marketing all impact on establishing people's food shopping habits (Hastings et al. 2003). Many studies have shown that people believe advertising is one of the most powerful influences in consumer and children grocery shopping behaviour (Story & French, 2004). Food preferences of children in UK using experimental designs have consistently shown that children exposed to advertising will choose advertised food products at significantly higher rates than children who were not exposed (Coon & Tucker, 2002). Another study conducted by Wilson and Wood (2004) used qualitative method (focus groups and in-depth interviews) to investigate the influence of children on food shopping trip in Scotland. They found that children have significant influence on food shopping behaviour and they may also influence their parents' decision making with regard to certain categories of supermarket products (Wilson & Wood, 2004).

1.8. Food shopping habits and food preferences

Food preferences (likes and dislikes) have been suggested determinants for food intake (Turell, 1998). A variety of social, cultural, personal, regional and economic factors contribute to the development, maintenance and change of food preference (Gray & Leyland, 2009; Moreire & Padrao, 2004). A study commissioned by the Department of Epidemiology and Public Health, Health Behaviour Research Centre in the UK, concluded that specific food preference may be inherited but family environments play a main part in lifelong food preference (Wardle & Cooke, 2008). Earlier review found that when many choices are available people mostly chose foods that taste sweet and have a high fat content (Reed, Tanaka & McDaniel, 2006). Another review indicated that a sweet taste is a combination of genetic variation and the early experience beginning in utero (Reed et al. 2006). Similarly a study conducted by the Patrick and Nicklas (2005) shows that during early and

middle childhood, family environments are the key aspect for the development of food shopping habits, food preferences, and patterns of food intake and eating styles.

A recent Western Australian Pregnancy Cohort Study (Raine Study) examining adolescent dietary intake, reported family lifestyle factors such as parental health behaviours, family functioning, family structure, maternal education and family income are associated with adolescent food preference (Ambraosini, Oddy, Robinson, O'Sullivan, Hands, Klerk et al. 2009). A cross-sectional survey conducted by Cooke and Wardle (2005) examined age and gender differences in the food preferences of British school children in West London. The study concluded that boys have more unhealthy food preferences than girls at every age group and there is a strong correlation between familiarity and preferences (Cooke & Wardle, 2005). Most importantly adolescents' unhealthy food shopping habits and food preferences are associated with an unhealthy lifestyle that impact on their future health according to Kourlaba, Panagiatakos, Mihas, Alevizos, Marayiannis, Mariolis et al. (2009).

At the time of planning this study no publication reporting on the effects of physical store versus internet grocery shopping environment in terms of consumers' environmental characteristic and food shopping habits in the UK could be found. Furthermore, food purchase behaviour and the way food is distributed and made available to consumers are clearly important in the present context of escalating obesity in both developed and developing countries and climate change linked to carbon labelling, food miles and carbon footprint (Pettinger, Holdsworth & Gerber, 2007). In the UK existing patterns of food consumption will result in the society being loaded with a heavy burden of diet related ill health. Moreover, due to their repetitive character and their potential impact on environment and personal behaviour, online grocery shopping has gained attraction of the policy makers. For instance, according to the SDC, (2009) online grocery shopping will make a contribution to making a sustainable diet by reducing energy input. These basic data also could be used for a more in-depth analysis of e-grocery shopping including key issues around shopping environment, how it influences consumers' diet quality and it may provide a better understanding of consumers

food shopping habits, those areas in the future especially in the area of public health nutrition interventions and nutrition education programmes.

1.9. Aim

The aim of this study is to compare online with in-store grocery shopping in terms of consumers' environmental characteristics and food shopping habits.

1.10. Objectives

1. To compare the consumer environmental characteristics of regular grocery shoppers who buy on-line against those who buy in the store, using a quantitative questionnaire (**Appendix 2**).

2. To compare the food shopping habits between consumers who buy on-line against those who buy in the store, using a quantitative questionnaire (**Appendix 2**).

1.11. Hypothesis and research question(s) to be addressed

H1. The primary hypothesis states that the environmental characteristic's of consumers who buy on-line will be significantly different from those of consumers who buy in the store.

H2. The secondary hypothesis states that the food shopping habits of consumers who buy on-line will be significantly different from shopping habits of consumers who buy in the store.

Overall, the purpose of this study is to perform a quantitative cross-sectional study to compare whether or not regular grocery shoppers who buy online are significantly different in terms of environmental characteristics and grocery shopping habits to consumers who buy in store.

Chapter 2: Methodology

2.1. Study design

There are various types of methods that can be used for designing, carrying out and analysing the results of a study, however, the aim and objectives of the research will determine the final methods that will be used in order to carry out effective research. Methods are specific research techniques that are undertaken to address the research question of a study (Blaxter, Hughes & Tight, 2006). They are classified as quantitative and qualitative approach. A qualitative approach takes place in the natural setting and the researcher usually goes to the side of the participant to conduct research (Greenhalgh, 2006). The qualitative research uses multiple methods and the data is collected by open-ended, observations, interviews, documents with the primary intent of developing themes from the data (Greenhalgh, 2006). The strength of qualitative method relies on validity; on the other hand the strength of quantitative method is based on its reliability/repeatability. The quantitative approach involves the researcher using positivist claims for developing knowledge such as reduction to specific variables and hypothesis (Blaxter et al. 2006). Quantitative research begins with an idea through measurement, generates data and by deduction allows conclusion to be a drawn (Greenhalgh, 2006).

The main purpose of this study is to search new relationships associated with the online grocery shoppers versus in store grocery shoppers being investigated on consumers' environmental characteristics and food shopping habits. The method used in this study was quantitative. Nevertheless, one qualitative question (**Q8**) "What do you understand by the FOOD MILES"? (The distance that foodstuff travels the production location and the consumption marketplace) was used for the study in order to be able to obtain detailed information about the participants environmental characteristics. The independent variable for this study is online versus in store grocery shopping and the dependent variable is characteristics of subject (socio-demographic features) and shopping habits. The level of statistical significance for all the analyses was set at $P < 0.05$. Age ranges, sex,

level of education, employment status and household composition were used as potential confounding variables.

2.2. Population & subjects

A descriptive cross-sectional survey design was used to collect data retrospectively at a single time point to compare whether regular grocery shoppers who buy online significantly differ in terms of environmental characteristics and grocery shopping habits to consumers who buy in store. The data collector approached adults in Wigan town centre (Manchester) and verbally asked participants to complete a self administered questionnaire by randomly selecting participants according to the survey sampling scheme (Barnet, 2002). The most recent report conducted by The Association of Public Health Observatories (TAPHO) [2009] shows that the population of Wigan Borough 305.600 and the health profile is significantly worse than rest of the England. For example, homelessness, binge drinking adults, smoking, early deaths from cancer, inequalities by gender and level of deprivation is worse than the average standards across England. Despite improvements over the last decade death from all causes is still above England's average rates and about 60% of the population is overweight or obese (TAPHO, 2009). The employment rate for the three months to March 2010 across the town is 72.0% and the number of unemployed people increased to 53.000 (Office for National Statistics (ONS), 2010).

2.3. Sample size

This is a quantitative cross-sectional study that compared the online grocery shopping environment with the physical store environment on consumers' characteristics and food shopping habits. From the literature in this area, there are no studies on e-grocery versus physical store shopping focusing on a particularly consumers characteristics' and food shopping habits. Most of the studies are large scale and they focus on consumer motivation, satisfaction and intention towards e-shopping within subjects from different countries. Thus the sample sizes of these studies are larger than the scope of this study. For this study the sample size was based on previous research by Raijas, (2002), Huang &

Oppewal, (2006) and Ramus & Nielsen, (2005) who employed sample of 91-155, 152 and 56. Based on these studies sample size of 124 was recruited in town centre of Wigan (Manchester). Prior to the construction of any measures, 23 respondents were excluded from the study. Because they provided insufficient information for their socio-demographic features and food shopping habits to be reliably coded. The final data set used in this study total was 101 respondents, 54 of whom were from the physical store shoppers sample and 47 from the online grocery shoppers' sample.

2.4. Inclusion & exclusion criteria

The subject inclusion criteria included male and female, being a physical or e-grocer shopper, aged 18+ and being in charge of grocery shopping regularly. It is widely accepted that the person in charge of grocery shopping regularly passes on information about taste, interest, choice, preferences, responsibilities, etc, of his/her household (Kervenoael, Soopramanien, Hallsworth & Elmas, 2007). Subject exclusion criteria include <18 years and not buying grocery shopping regularly for themselves or for their family (as these subjects will not influence food shopping directly). Those who were not English speakers were also excluded due to the need to understand the questionnaire.

2.5. Questionnaire

Standard questionnaires provide the benefit of having already being validated and proved satisfactory in use (Margetts & Nelson, 1997), however no questionnaire was available on this topic for the purpose of this study, therefore questions were adapted from previously validated questionnaires for research on perceived importance of consumer perception of nutrition and health claims (e.g.Van Trijp & Van der Lans, 2007) and food shopping habits (FSA, 2007). To determine the validity of the research questionnaire a pilot study was carried out on a sample of 14 women and 6 men (**n** = 13 in store shoppers and **n** = 7 online shoppers) from Wigan town centre. Piloted questionnaire was ensured that regardless of who responds and to whom they respond the questionnaire accurately measured awareness, was formatted correctly, understandable and reliable (Olsen, 2009). After the pilot study was tested, a few amendments were made prior to using

the tool on the target population in Wigan in order to improve the clarity and presentation of the questionnaire. Data were collected from each sample using the same structured questionnaire. The questionnaire divided into two sections, from the first section questions 1-6 sought information on the respondent's socio-demographic features including gender, age range, level of education, number of people in household, employment status and asked respondent: "When you shop for food you normally buy": there were four response alternative – 'for yourself only', 'for you and a partner/spouse', 'for you and others in the house', and 'not applicable'. The highest level of education completed was used as a marker for participants' SES. The second section of questions from 7-18 focused on shopping habits and environmental characteristics of participants and was examined on the basis of 12 questions, some questions which had one and some more than one response categories. For example, respondents were asked: "Do you do your grocery/food shopping online? If you answered the question 11 as NO please go to question 14". The response options include: 'Yes', and 'No'. Another example; "Do you choose any of the following when you are doing grocery/food shopping? 'Please tick all that applies". The response options include: 'buy fair trade (e.g. ensures a fair deal for producers in developing countries)', 'buy organic food', 'buy local products', 'avoid buying food that is not in season', 'buy free range food (e.g. meat, eggs, etc.)', 'use-re-useable carrier bags when food/grocery shopping' and 'none of the above. Questions 15-18 focused on different aspects of concerns about on issues related to food shopping habits of participants. Question 18 was measured by asking respondents to value how important the factors are such as a) 'cost of products', b) 'perceived health claims', c) 'perceived quality' and d) 'nutrient content' 'all the food that you regularly buy'. Asked respondent's rate of importance on a scale of 1-5 for each factor, where 1= 'not at all important' and 5= 'extremely important/most important'. Question 18 composed of 19 sections which include 'red meat (e.g. beef, lamb, pork)', 'poultry (e.g. chicken, turkey)', 'fish (e.g. salmon, mackerel)', 'fruit (e.g. apple, orange, grape)', 'vegetables (e.g. pepper, carrot)', 'dairy product (e.g. milk, cheese)', 'bread (all type of bread)', 'pulses (e.g. lentils, chickpeas)', 'starchy foods (e.g. pasta, rice)', 'fat/butter/margarine' 'coffee and tea', 'crisps and

confectionary', 'tinned food (e.g. corn, beans)', 'soft drink (e.g. coca cola)', 'alcohol (all types)', 'ready meals (e.g. pizza)', 'nuts and seeds (e.g. pistachio, walnut, pumpkin seed)', and 'fruit juice (e.g. apple, orange)'.

2.6. Procedures

The research design used two different locations for this study, Wigan town centre and the hair salon (Celly's Hairstyle International) which is based in Wigan town centre. A cross-sectional study design was used; the data collector approached adults in Wigan town centre and asked whether they would voluntarily answer a few questions. People who were in the hair salon while waiting for service were asked to participate in the study. An effort was made to maximise the diversity of the sample with respect to SES and in order to be able to reach online shoppers. First, the data collector asked shoppers to indicate their degree of involvement for themselves or for household's grocery shopping. Only shoppers who were in charge of grocery shopping regularly were asked to fill the questionnaire in order to increase the likelihood of sampling representative. The data collector explained the purpose of the study, what was required of each respondent and also offered each respondent an eatwell plate leaflet (**Appendix 4**) for their involvement. The eatwell plate is recommended by the FSA and shows how much of what you eat should come from each food group in order to make a varied and balanced diet. The data collector asked the shoppers to read the participant information sheet before answering the questionnaire. The shoppers' decision to participate was entirely voluntary. The data was collected from 23rd of March to 30th April 2010. This included the 2010 Easter holiday. The data was collected at different times of the day on different days and weekends in order to maximize the diversity of respondents. Institutional review board approval was obtained from the University of Chester (March, 2010) and permission was sought from the hair salon owner (March, 2010) and the purpose of the study explained (**Appendix 5**).

2.7. Data management & data analysis

All data was analysed and calculated using the SPSS 17 version (Statistical Package for Social Sciences program 17). Justification for using SPSS was that this type of statistical package provides a solid foundation for description and analysis (Field, 2005). For this study descriptive statistics and frequencies were used to describe the questionnaire results and socio-demographic characteristics of the sample, including mean, median, and standard deviation. The study hypotheses were analyzed using cross tabulation and excel.

Question 18 composed of 19 sections by asking respondents to value "how important the factors" a) 'cost of products', b) 'perceived health claims', c) 'perceived quality' and d) 'nutrient content' "all the food that you regularly buy". Asked respondent's rate of importance on a scale of 1-5 for each factor, where 1= 'not at all important' and 5= 'extremely important/most important'. In order to be able to analyse **Q18** the original data was transferred from non-parametric original data into interval-level also known Likert scale data by totalling/sum 19 question for each person. The Independent-Sample T Test and One-Way ANOVA were used to describe this question results.

Chapter 3: Result

3.1.: Introduction

The results are presented in seven main sections: respondent demographics features (questionnaire **(Q) 1-5**), "who do you shop for" (**Q6**), environmental characteristic in relation to food shopping (**Q7**), participants' knowledge in relation to FOOD MILES (**Q8**), level of responsibility for grocery/food shopping (**Q9**), food shopping habits (**Q10-14**) and concerned issues related to food shopping habits (**Q15-18**).

At the start of the questionnaire all participants were asked about socio demographic features in general (**Q1-5**). The questionnaire covered the gender, age range, the level of education, the number of people in household and the employment status. A total of **n**= 101 (**n**=number) people from age range 18-74 years, from 54 in-store and 47 the online participants completed the study. The demographic comparisons (see **Table 2** for full details of respondent demographics) revealed that majority of participants were between the age ranges of 35-54 years.

Table 2: shows respondent demographics

Demographic indicator	All participants	In-store participants	Online participants
Gender	(n)	(n)	(n)
Male	17	8	9
Female	84	46	38
Age range			
18-24	14	11	3
25-34	19	4	15
35-54	47	27	20
55-64	18	9	9
65-74	3	3	0
Level of education			
GCSE	38	24	14
A level	10	3	7
University degree/Diploma	30	9	21
Other	23	18	5
No. of people in household			
1	8	7	1
2	36	21	15
3	30	15	15
4	18	6	12
5	5	4	1
More than 5	4	1	3
Employment status			
Full time	38	17	21
Part time	25	15	10
Self-employed	6	4	2
Student	5	2	3
Employee	4	1	3
Not working	10	5	5
Retired	9	7	2
Other	4	3	1

Most participants were female (total **n**=84), male (total **n**=17) and nearly half were 35-54 aged range (total **n**=47). The majority of the participants were educated up to "GCSE" (total **n**=38), followed by "university degree/Diploma" (total **n**=30) and work "full-time" (total **n**=38) followed by "part-time" (total **n**=25). Participants were asked (**Q5**) "how many people there are in their household" and majority of them live in households with "2" (total **n**=36), followed by "3" (total **n**=30), "4" (total **n**=18), "1" (total **n**=8) and "more than "5" people (total **n**=4).

3.2: Who do you shop for..

All participants were asked when they do their food shopping do they normally buy (**Q6**): "for yourself only" "for you and a partner/spouse" for you and others in the house (e.g. your family, housemates, etc,)" and "not applicable" (see **Figure 1** for full details).

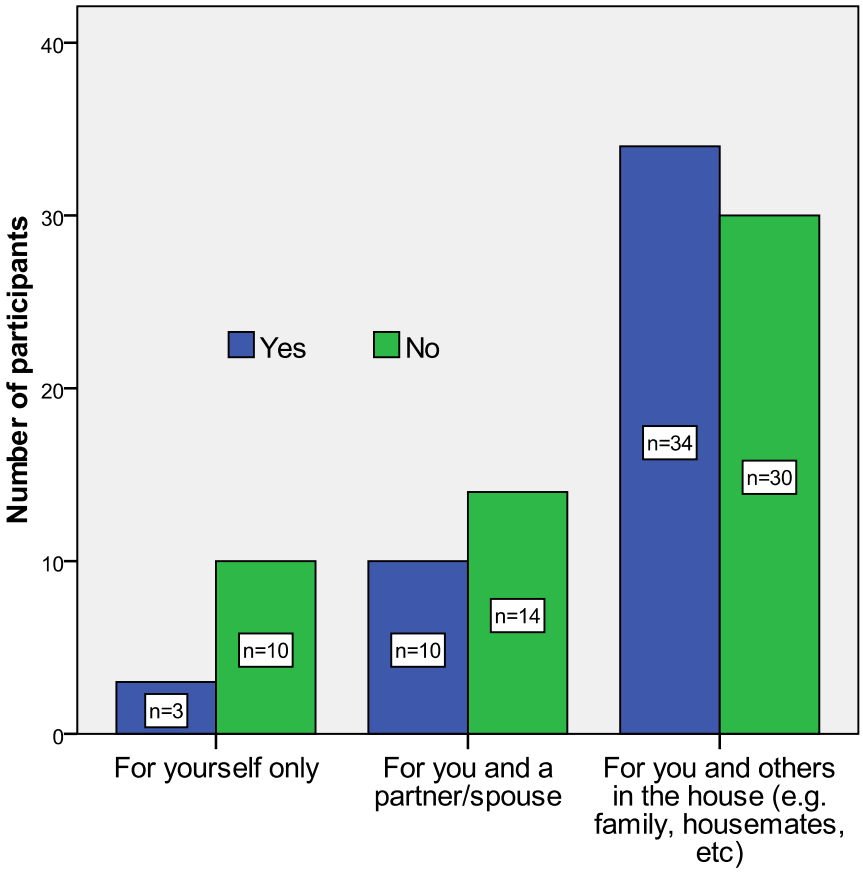

Figure 1: Who do you shop for?

Figure 1 shows that the majority of the online (**72.3%**) and the store (**55.6%**) participants buy food "for you and others in the house (e.g. family housemates, etc)" followed by "for you and a partner/spouse" (**21.3%** online and **25.9%** store) and finally only less than quarter buy "for yourself only" (**6.4%** online and **18.5%** store).

3.3: Environmental characteristics' in relation to grocery/food shopping

All respondents were asked to select from a list of options, concerns about environmental issues in relation to food shopping (**Q7**) which they might have had concerns about. Just under ¾ of the women (**71.4%**) and male (**70.6%**) samples "use-re-useable carrier bags when food/grocery shopping" came first in the list (see **Table 3** for full details).

Table 3: shows gender characteristics in relation to food shopping

	Female		**Male**	
Total (n)	84		17	
Q7. Do you choose any of the following when you are doing food/grocery shopping?	**No (n)**	**Yes (n)**	**No (n)**	**Yes (n)**
Buy fair trade (e.g. ensures a fair deal for producers in developing countries)	47	37	12	5
Buy organic food	59	25	12	5
Buy local products	31	53	10	7
Avoid buying food that is not in season	76	8	16	1
Buy free range food (e.g. meat, eggs, etc.)	30	54	7	10
Use-re-useable carrier bags when food shopping	24	60	5	12
None of the above	80	4	17	0

Over ½ the men participants "buy free range food" (**58.8%**), followed by "buy local products" (**41.1%**), then "buy fair trade" and "buy organic food" (**29.6%**) and the last was "avoid buying food that is not in season" (**5.9%**). The second environmental issues in relation to food which concerned the women participants was "buy free range" (**64.3%**) followed by "buy local products" (**63.1%**) fourth "fair trade" (**44.0%**), then started declining through the "buy organic food" (**29.8%**) "avoid buying food that is not in season" (**9.5%**) and the last was "none of the above" (**4.8%**).

Table 4: shows age range characteristics in relation to food shopping

Age ranges	**18-24**	**25-34**	**35-54**	**55-64**	**65-74**
Total (n)	14	19	47	18	3
Q7. Do you choose any of the following when you are doing food/grocery shopping?	**(n)**	**(n)**	**(n)**	**(n)**	**(n)**
Buy fair trade (e.g. ensures a fair deal for producers in developing countries)	2	9	21	8	2
Buy organic food	2	8	14	3	3
Buy local products	8	5	29	15	3
Avoid buying food that is not in season	3	4	1	0	1
Buy free range food (e.g. meat, eggs, etc.)	5	14	31	12	2
Use-re-useable carrier bags when food shopping	7	13	34	16	2
None of the above	0	1	2	1	0

There were few significant differences between the “age ranges” at this question. Those in the older age ranges “35-54” and “55-64” were more likely to have concerns about environmental issues in relation to food shopping compared to the oldest “65-74”and the youngest age ranges “18-24”.

Table 5: The number of people in household characteristics in relation to food shopping

Number of people in household	**1**	**2**	**3**	**4**	**5**	**>5**
Total (n)	8	36	30	18	5	4
Q7. Do you choose any of the following when you are doing food/grocery shopping?	**(n)**	**(n)**	**(n)**	**(n)**	**(n)**	**(n)**
Buy fair trade (e.g. ensures a fair deal for producers in developing countries)	3	**20**	**12**	6	1	0
Buy organic food	4	**13**	7	3	1	2
Buy local products	5	**27**	**15**	7	4	2
Avoid buying food that is not in season	0	3	4	1	0	1
Buy free range food (e.g. meat, eggs, etc.)	5	**26**	**17**	9	3	4
Use-re-useable carrier bags when food shopping	5	**29**	**20**	**13**	4	1
None of the above	0	1	1	1	0	1

More of those with “2”, “3” and “4” people in their household were concern more about environmental issues in relation to food compared to those with “1” , “5”, “more than 5” people in their household. Numbers in bold in the table above indicate a finding that is significantly different from “1” “5” and “more than 5” people in household.

Table 6: The educational characteristics in relation to food shopping

	GCSE	**A Level**	**University Degree/Diploma**	**MSc/PhD**	**Other**
Total (n)	38	10	30	0	23
Q7. Do you choose any of the following when you are doing food/grocery shopping?	(n)	(n)	(n)	(n)	(n)
Buy fair trade	16	4	13	0	9
Buy organic food	10	1	13	0	6
Buy local products	22	5	15	0	18
Avoid buying food that is not in season	3	0	4	0	2
Buy free range food	22	6	21	0	15
Use-re-useable carrier bags when grocery shopping	25	6	25	0	16
None of the above	3	0	1	0	0

Significantly more of the participants who have “university degree/diploma” “use-re-useable carrier bags when food/grocery shopping” (**83.3%**) than the participants who had “GSCE” (**65.8%**) and “A level” (**60.0%**). The second environmental issue in relation to food shopping concerned by the higher educated participants was “buy free range food” (**70.0%**) followed by “buy local products” (**50.0%**) then for both “buy fair trade” and “buy organic food” (**43.3%**) and least concerned issue was “avoid buying food that is not in season (**13.3%**). Similar trend can be seen across the participants who had “A levels” and the “other”. The second environmental issues which concerned the participants who had “GSCE” were both “buy free range food” and ”buy local products” (**57.9%**) followed by “buy fair trade” (**42.1%**) and “buy organic food” (**26.3%**).

Table 7: The employment status in relation to food shopping

	Full time	**Part time**	**Self employed**	**Student**	**Employee**	**Not working**	**Retired**	**Other**
Total (n)	38	25	6	5	4	10	9	
Q7. Do you choose any of the following when you are doing food shopping?	(n)	(n)	(n)	(n)	(n)	(n)	(n)	(n)
Buy fair trade	19	11	3	1	1	2	3	2
Buy organic food	12	11	1	0	1	0	3	2
Buy local products	17	18	3	2	1	8	8	3
Avoid buying food that is not in season	4	3	1	0	1	1	0	o
Buy free range food	27	19	1	2	0	3	6	4
Use-re-useable carrier bags when grocery shopping	25	16	6	4	4	4	9	4
None of the above	0	0	0	0	0	0	0	0

27 out of the total=38 full-time participants “buy free range”, 25 “use-re-useable carrier bags when they do food/grocery shopping” 19 “buy fair trade” 17 “buy local products” 12 “buy organic food” and 4 “avoid buying food that is not in season”. A similar trend can be seen across the part-time sample from 19 out of the total=25 participants “buy free range”, 18 “buy local products”, 16 “use-re-useable carrier bags when food/grocery shopping”, 11 for the both “buy fair trade” and “buy organic food” and finally 3 “avoid buying food that is not in season”.

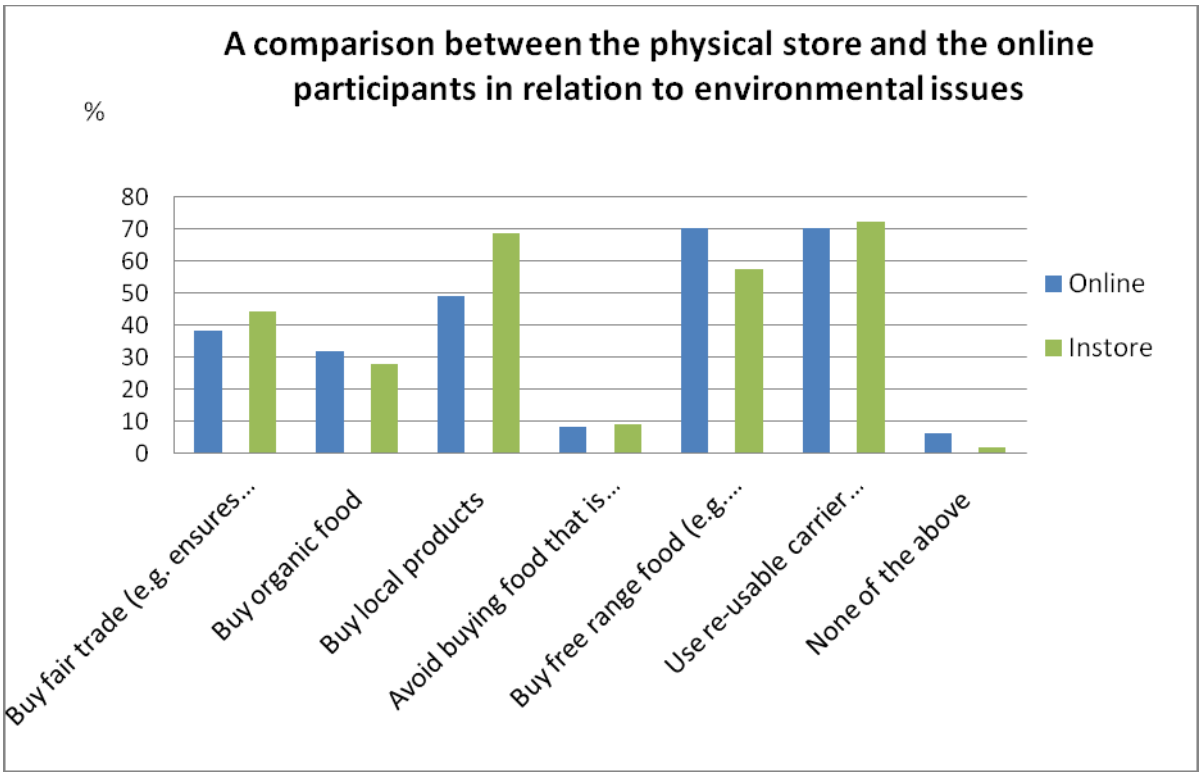

Figure 2: **A visual display comparing all participants' environmental issues**

All participants were asked to select from a list of options, any issues related to food shopping which they might have had concerns as shown in **Figure 2**. Clearly for the online sample both "use-re-useable carrier bags when food/grocery shopping" and "buy free range food (e.g. meat, eggs, etc)" n=33 (**70.2%**) came first in the list. The second was "buy local products" n=23 (**48.9%**) followed by "buy fair trade" n=18 (**38.3%**), fifth in the list which concerned by the participants was "avoid buying food that is not in season" n=4 (**8.5%**) and the last was "none of the above" n=3 (**6.4%**). Similar trend can be seen across the in-store sample "use-re-useable carrier bags when food/grocery shopping" n=39 (**72.2%**) came first in the list followed by "buy local products" n=37 (**68.5%**) then "buy free range" n=31 (**57.4%**), fourth was "fair trade" n=24 (**44.4%**), followed by "buy organic food" n=15 (**27.8%**), relatively less of a concern in the sixth place was "avoid buying food that is not in season" n=5 (**9.3%**) and the last was "none of the above" n-1 (**1.9%**).

3.4: Participants' knowledge in relation to "FOOD MILES"

Another environmental issue in relation to food shopping habits is (**Q8**). It should be noted that this question is qualitative in the questionnaire and was looking for participants' knowledge in relation to environmental characteristic. However, this question was coded quantitative in order to be able to analyse and all answers' will be discussed in the **Chapter 4**. All participants were asked "what do you understand by the term FOOD MILES". From 13 out of the total=47 online (**27.7%**) and 12 out of total=54 in-store participants (**22.2%**) correctly answered the "food miles" question. There was relatively very little variation across the gender (**25%**) women and (**23.5%**) men responded correctly. Across the age range those aged "35-54" were more likely to respond correctly (**29.8%**) than either "18-24" (**28.6%**), "55-64" n=4 (**22.2%**), "25-34" n=3 (**15.8%**) or "65-74" no correct respond. There was significant variation between the levels of education at this question (see **Figure 3** for full details).

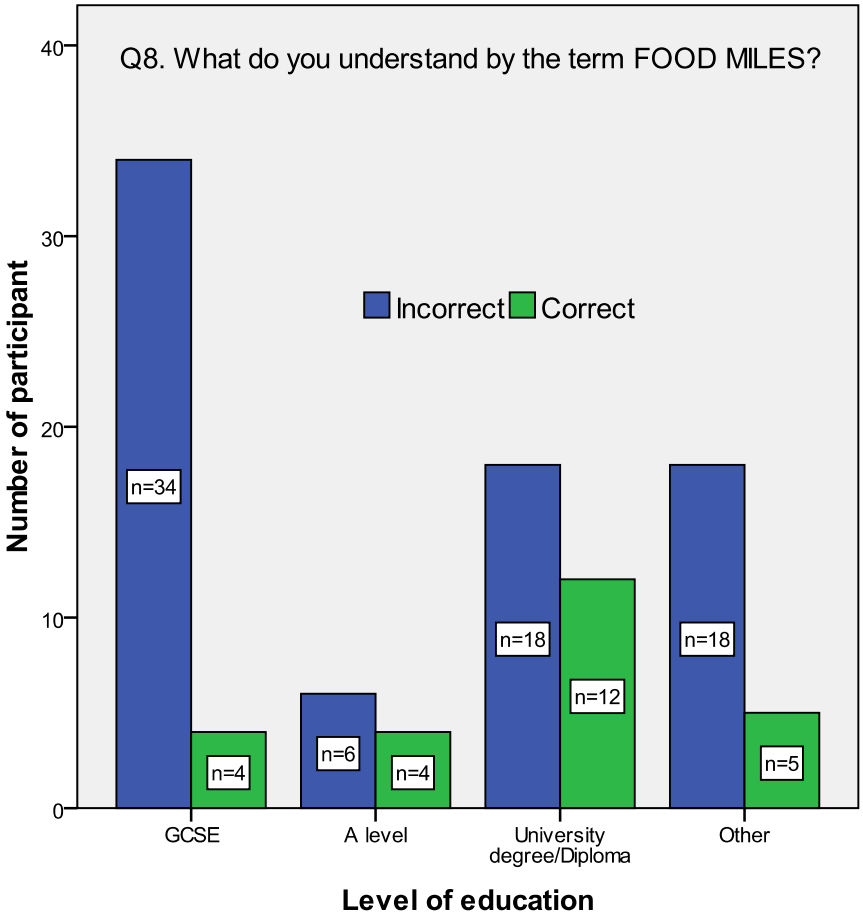

Figure 3: Correct knowledge of "FOOD MILES"

There was significant difference between the education levels in relation to respond to the food miles question. For both participants who had "university degree/diploma" and "A level" (**40.0%**) correctly answered the "food miles" question which was more than either "GCSE" (**10.5%**) or "other" (**21.7%**).

3.5: The level of responsibility for grocery/food shopping

All participants were asked to state the level of responsibility they have for the grocery/food shopping in their household (**Q9**). More of those of age range between 25-34 (**84.2%**), 55-64 (**83.3%**) and 35-54 (**80.9%**) took "all/most of the responsibility" for household food shopping compared to the youngest age range 18-24 (**42.9%**). Those participants who had "GSCE" qualification (**89.5%**), followed by "other" (**78.3%**) and "A level" (**70.0%**) were more likely to be responsible "for all/most grocery/food" shopping compared to participants who had university degree/diploma (**60.0%**). Predictably, those "currently not working" (**90.0%**), "retired" (**88.9%**) and "working part-time" (**76.0%**) were more likely to be responsible "for all/most food shopping" compared to "full-time" (**73.7%**), "self-employed" (**66.7%**) and "student" (**40.0%**). Those of who live in household size "1" (**100.0%**), "4" (**88.9%**), for both "2" and "5+" (**75.0%**) and "3" people (**70.0%**) were responsible "for all/most food shopping". Below (**Table 8**) table shows the level of responsibility in-store and the online participants took for food shopping for their family/for themselves.

Table 8: Shows all participants' responsibility for grocery/food shopping

Q9. **Thinking about food/grocery shopping, which best describes the level of responsibility you have for the shopping in your household?**				
	Responsible for all or most of the grocery/food shopping (n) (%)	Responsible for about half of the grocery/food shopping (n) (%)	Responsible for less than half of the food/grocery shopping (n) (%)	Total participants
Q11. Do you do your grocery/food shopping online?				
Yes	36 **76.6**	8 17.0	3 6.4	47
No	41 **75.9**	11 20.4	2 3.7	54

Participants were presented with three options, ranging from being "responsible for all/most of the food/grocery shopping" to "responsible for less than half of the food/grocery shopping". Three quarters for the both the online **n**=36 (**76.6%**) and the physical store participants **n**=41 (**75.93%**) claimed to be "responsible for all/most of the food/grocery shopping". Similar proportion of each participant claimed to be "responsible for about half of the food/grocery shopping" in-store sample **n**=11 (**20.4%**), online sample **n**=11 (**17.0%**) and claimed to be "responsible for less than half of the food/grocery shopping" in-store sample **n**=2 (**3.7%**) then online sample **n**=3 (**6.4%**).

3.6: Shopping habits (Q10-14)

This section of questionnaire covered how food shopping is done, why they do their food shopping online, what percentage and frequency of purchasing food shopping. The majority of in-store (**n**=52) and the online participants (**n**=40) used "large supermarket" (**Q10**), followed by "small grocery" or "corner shops" for both (**n**=14) only (see **Table 9** for full details).

Table 9: shows how most food/grocery shopping is done

	Online (n)	**In-store** (n)	**Total** (n)
Large supermarket (e.g. Tesco)	40	52	92
Small grocery stores or corner shops	14	14	28
Local specialist shops (e.g. butchers, green grocery)	13	16	29
Over the internet (e.g. Tesco, Ocado online)	47	0	47
Farmer markets (e.g. locally produced products)	3	8	11
Farmer shops	7	6	13
Street markets (e.g. open market and including from abroad)	8	12	20
Other	1	1	2

All participants were asked where they buy most of their household grocery shopping and not surprisingly, food shopping is dominated by large supermarkets. The majority of in-store (**n**=52) and the online participants (**n**=40) used "large supermarket", followed by "small grocery" or "corner shops" for both (**n**=14) participants. Whereas, "local specialist shops (e.g. butchers, green grocery shops)" used by (**n**=16) in-store and (**n**=13) the online participants and fourth was "street markets" (**n**=12) and (**n**=8) follows as above.

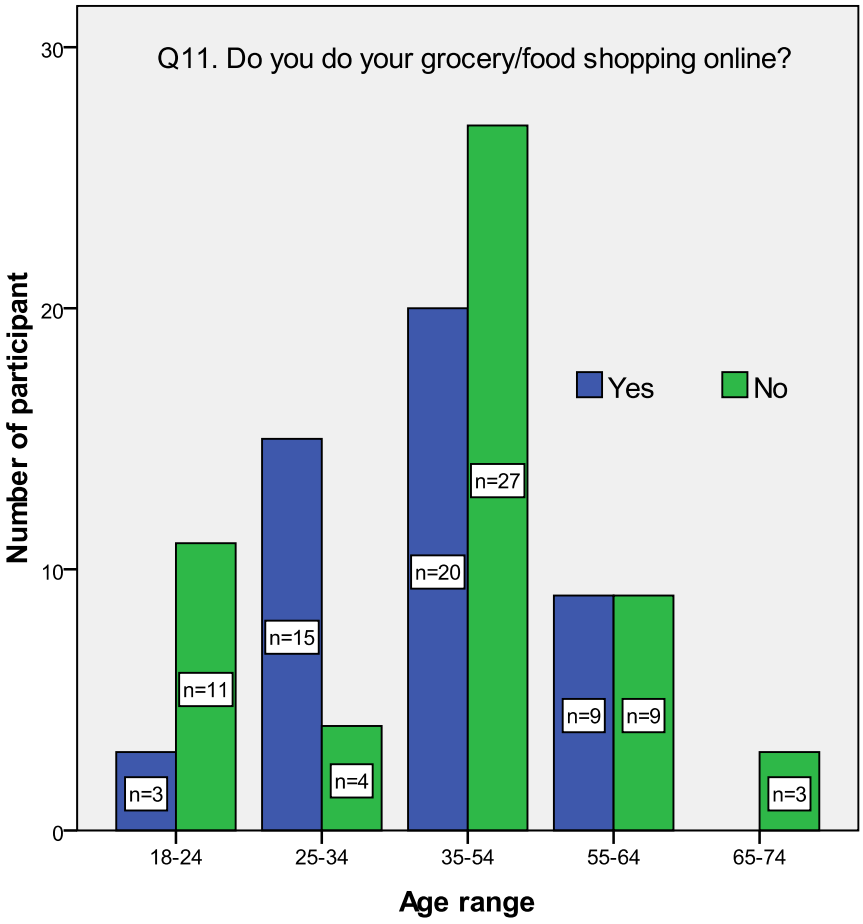

Figure 4: Crosstabs question 11 by the age range

Half of the physical grocery respondents were aged between "35-54" **n**=27 (**50.0%**) [see **Table 10** for full details]. Whereas, most grocery online shoppers were also from the age range "35-54" **n**=20 (**42.6%**).The youngest age-range (**18-24**) remained the least likely to do grocery shopping online.

Table 10: Shows the physical store and the online participants age range

In descending order	In-store		In descending order	Online	
1	35-54	50.0%	1	35-54	42.6%
2	18-24	20.4%	2	25-43	31.9%
3	55-64	16.7%	3	55-64	19.1%
4	25-34	7.4%	4	18-24	6.4%

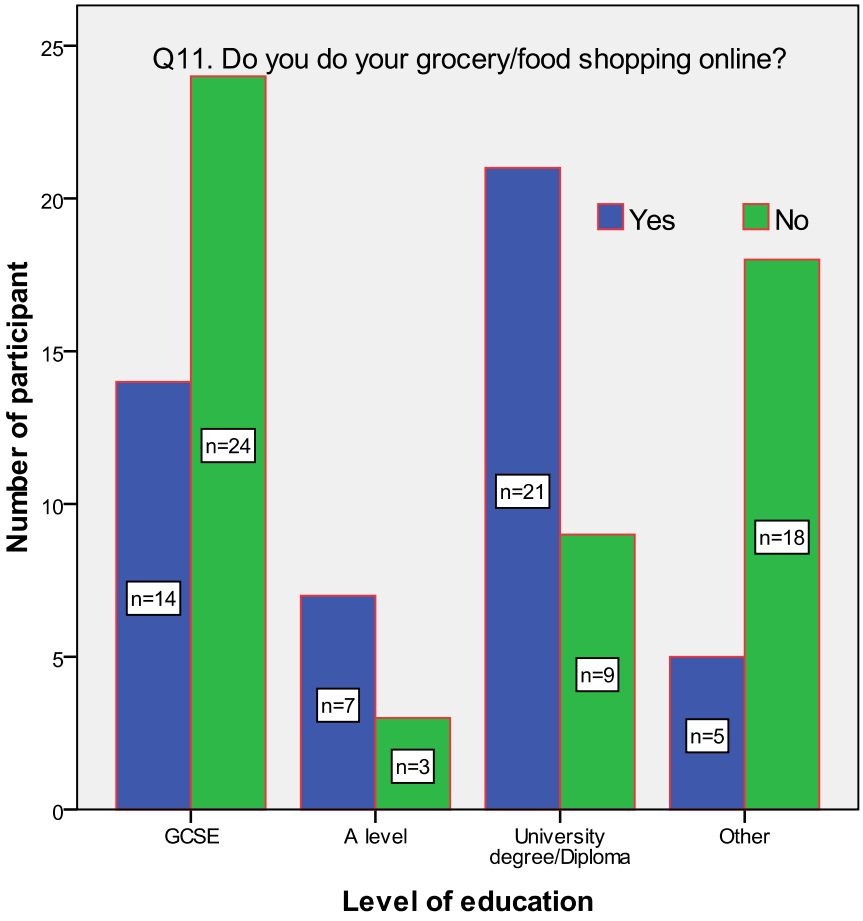

Figure 5: Crosstabs question 11 by the level of education

A larger proportion of the physical store sample was "GCSE" educated (**44.4%**) compared to the online sample which was (**29.8%**). On the other hand there were significantly more online participants who have "university degree/diploma" (**44.7%**) and "A levels" (**14.9%**) compared to in-store participants (**16.7%** and **5.6%**). More in-store participants tick the "other" option box (**33.3%)** than the participants who shop online (**10.6%**).

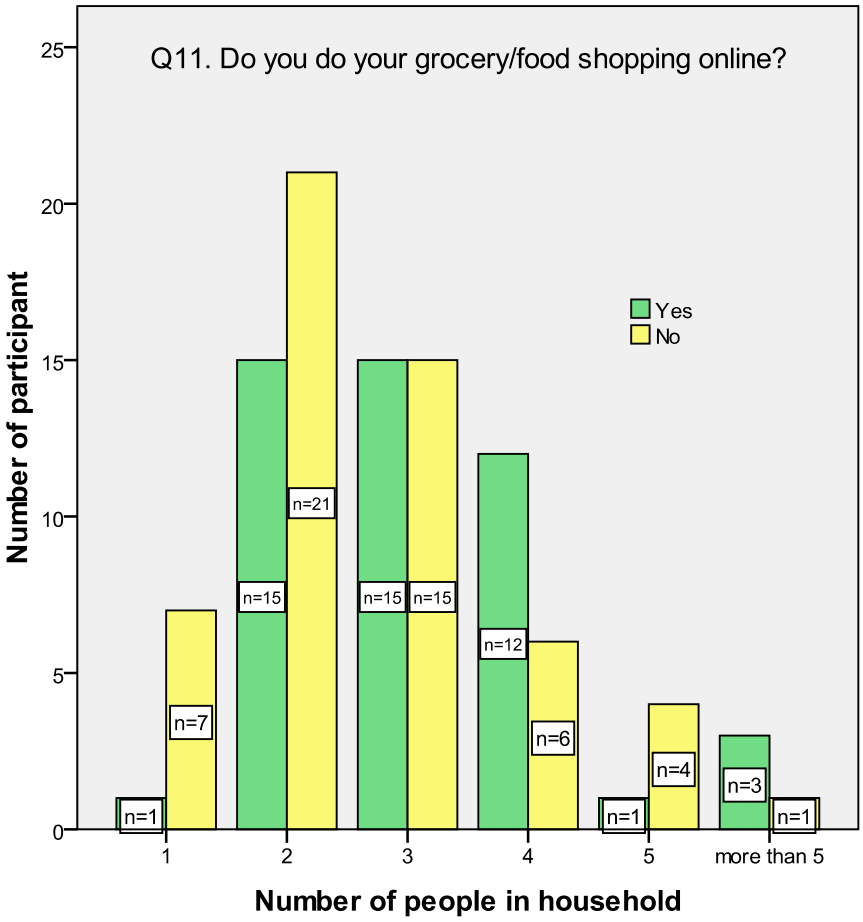

Figure 6: Crosstabs question 11 by the number of people in household

Most in-store participants stated that there were "2" people in their household with (**38.9%)** when compared to online respondents with (**31.9%**). Second larger proportions of online respondents were living with "3" people per household (**31.9%**) compared to only (**27.8%**) in-store participants. Under quarter of online respondents live with "4" people per household compared to (**11.1%**) of in-store sample. Whereas, a substantial minority of online participants were living with "5" people (**2.1%**) in their household, participants who live with "5+" people was (**6.4%**) and participants who live on their own was only (**2.1%**). The amount of people per household compared to in-store participants is in the same order as in-store shoppers (**7.4%, 1.9% and 13.0%**).

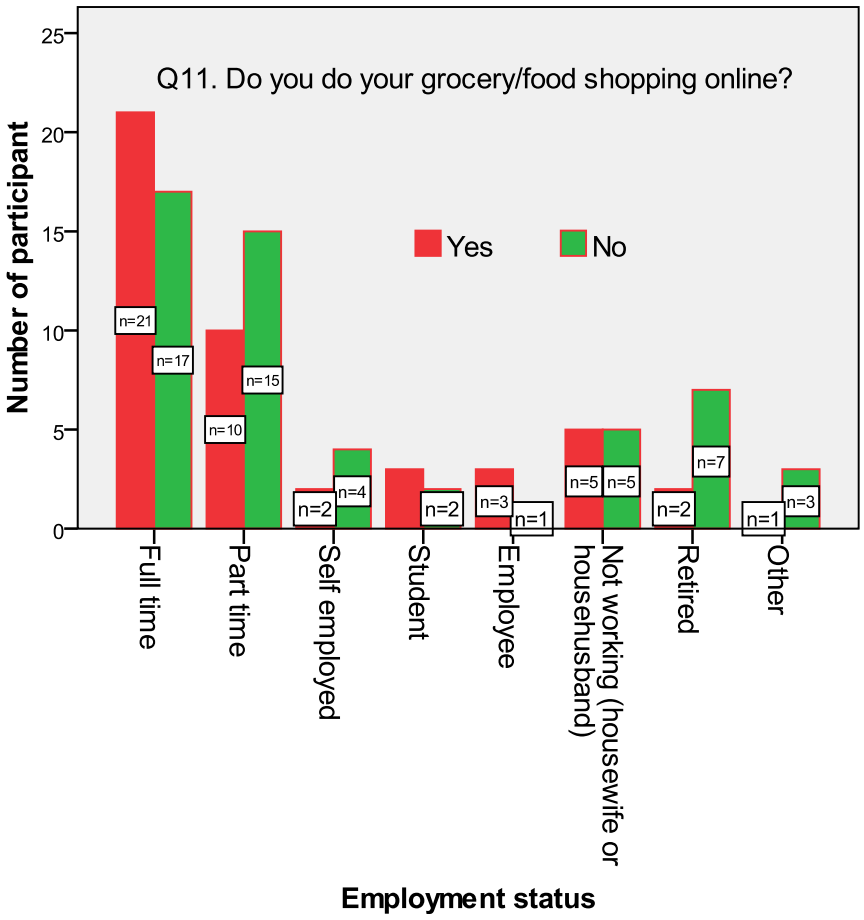

Figure 7: Crosstabs question 11 by the employment status

A larger proportion of the online sample was "full-time" (**44.7%)** followed by "part-time" (**21.3%**), "currently not working (housewife or househusband)" [**10.6%**], "employee" (**6.4%**), "student" (**6.4%**), "self-employed" (**4.3%**), "retired" (**4.3%**) and "other" (**2.1%**). On the other hand only (**31.5%**) of the in-store sample was "full-time" followed by "part-time" (**27.8%**) then "retired" (**13.0%**), "currently not working (housewife or househusban)" [**9.3%**], "self-employed" (**7.4%**), "other" (**5.6%**), "student" (**3.7%**) and finally "employee" (**1.9%**).

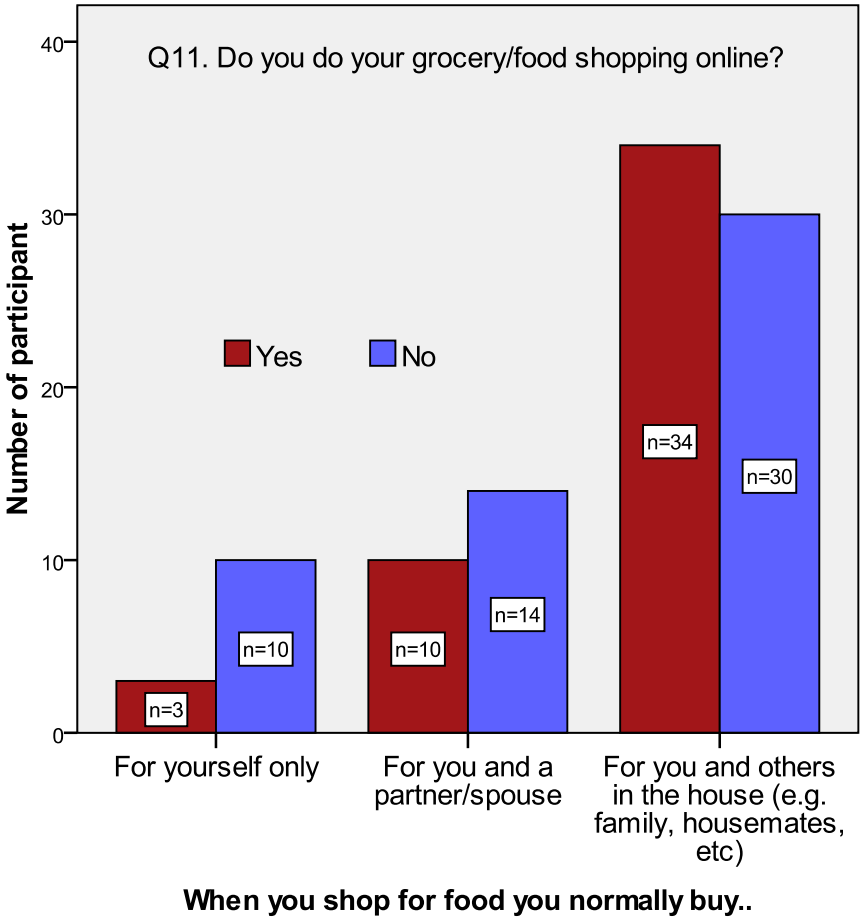

Figure 8: Crosstabs question 11 by the Q6

Nearly ¾ of the online sample **n**=34 (**72.3%**) claimed to buy food "for you and others in the house (e.g. family, housemates, etc)"**, n**=10 (**21.3%**) claimed to buy "for you and a partner/spouse" and **n**=3 (**6.4%**) buy "for yourself only". A similar trend is seen across the physical grocery sample where they claimed to buy "for you and others in the house (e.g. family, housemates, etc)" **n**=30 (**55.6%**), followed by "for you and a partner/spouse" **n**=14 (**25.9%**) and then "for yourself only" **n**=10 (**18.5%**).

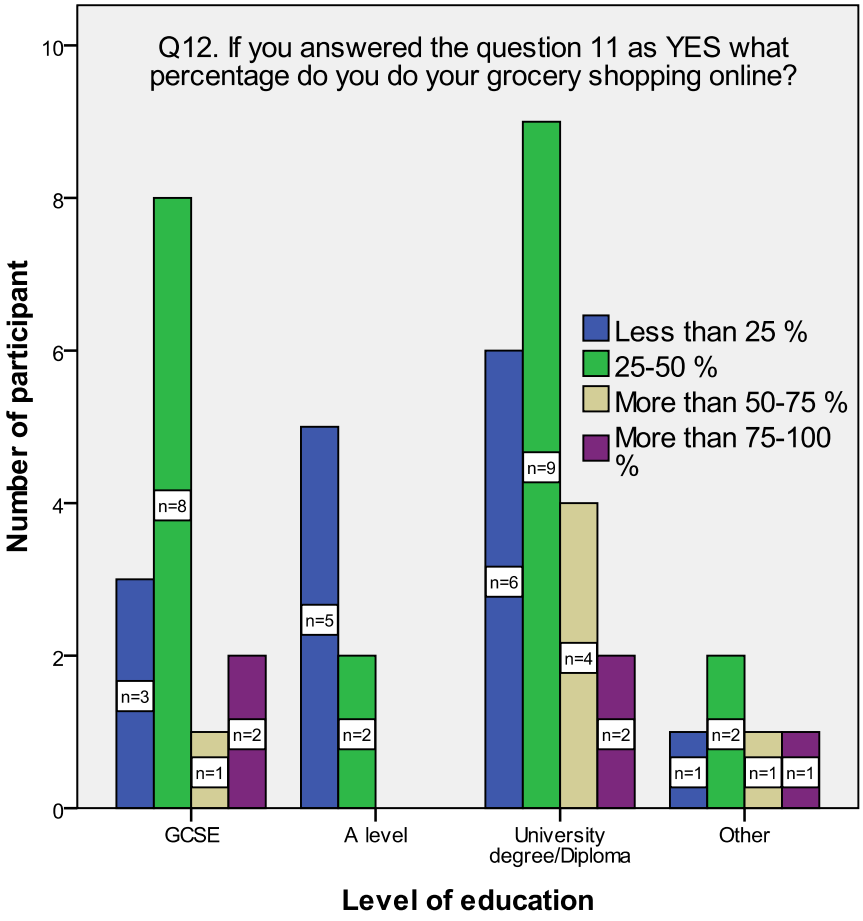

Figure 9: Crosstabs percentage (Q12) by the level of education

The majority of online participants did food shopping between 25-50% and those participants who had "GSCE" (**57.1%**), "university degree/diploma" (**42.9%**), "other" (**40.0%**) and "A level" (**28.6%**). Most "A level" participants did <25% (**71.1%**) compared to "university degree/diploma" (**28.6%**), "GSCE" (**21.1%**) and "other" only (**20.0%**). There was substantial minority of participants who did food shopping, between >50-75% and >75-100% via the internet. A similar trend can be seen across the people in participants' households. Those participants who did 25-50% of food shopping via the internet, have "2" (**53.3%**) followed by "4" (**50.0%**) then "3" (**33.3%**) and lastly "5+" people in their household (**33.3%**). Participants who did <25% once again had "2" people in their household (**40.0%**) followed by "3" (**33.3%**) then "5+" (**33.3%**) and lastly "4" people in their household.

Table 11: Crosstabs (Q13) by the level of education

	GCSE	**A level**	**University degree/Diploma**	**Other**
	(n)	(n)	(n)	(n)
Total	14	7	21	4
Q13. Why do you do your food/grocery shopping online?				
Reduced food miles	0	0	1	0
Live in rural area	0	0	0	0
Efficiency	7	3	14	4
Housebound	0	0	2	0
Cost savings	4	0	5	1
Price comparability	4	3	4	1
No time for store shopping	4	1	4	1
Other	1	1	3	0

Online participants were asked why they do their food shopping via the internet (**Q13**) and the majority (**57.1%**) of participants who work-full time indicated that for "efficiency" followed by "price comparability" (**33.3%**) then "no time for store shopping" (**23.8%**) and "cost savings" (**19.0%**). A significantly higher proportion of those who had "university degree/diploma" (**66.7%**) also indicated that they did food shopping via internet for "efficiency" compared to "GCSE" (**50.0%**) and "A level" only (**42.9%**). The second reason was "cost savings" is selected by "GSCE" (**28.6%**) and "university degree/diploma" (**23.8%**) people.

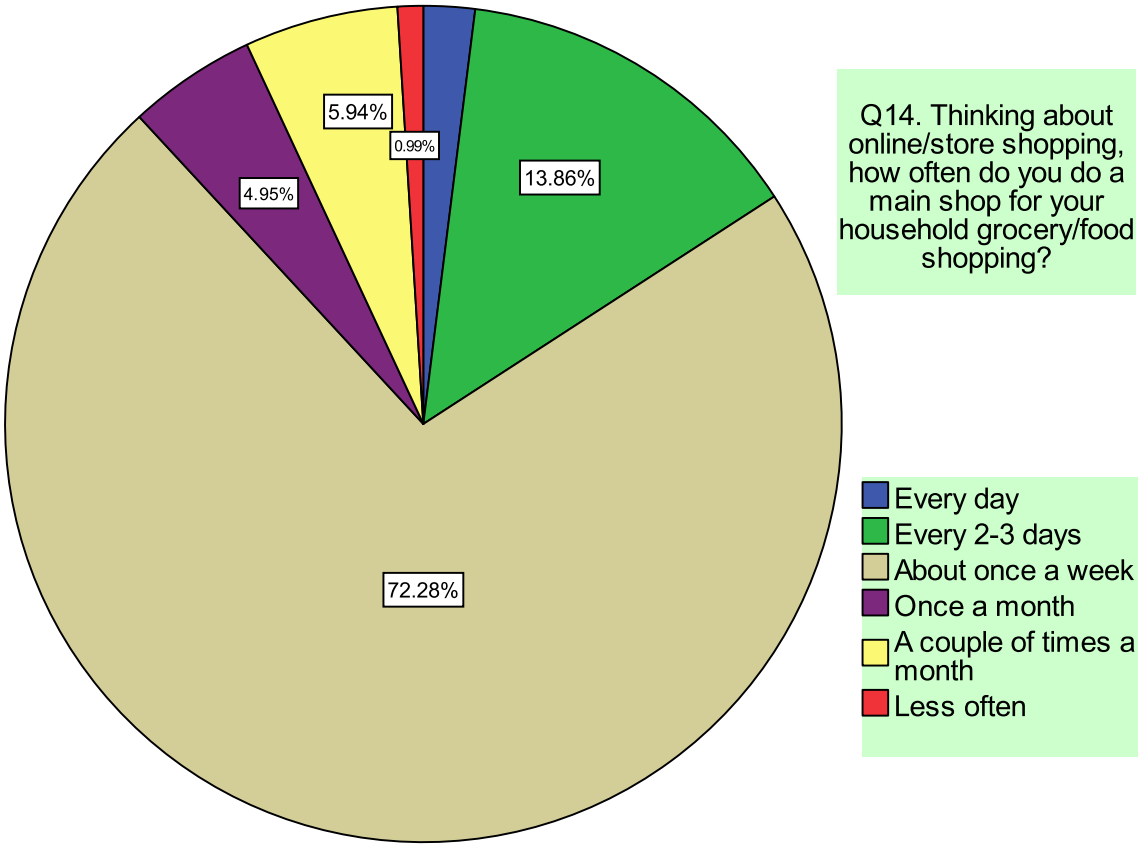

Figure 10**: **Frequency of purchasing food shopping

All participants were asked how often they shopped for food for their household. They were presented with six options, ranging from being "every day" to "less often". Almost three-quarters of all participants (**72.2%**) undertook a main food shop "once a week" followed by every "2-3 days" (**13.8%**) then "a couple of times a month" ((**5.9%**) and finally "once a month" (**4.9%**).

3.7: Concerns about on issues related to food

The questionnaire also included a section (**Q15-18**) on issues related to food, specific food issues and concerns about specific foods that could influence participants' food shopping decisions (habits) as well as their attitude to environmental issues in general. Participants were asked (**Q15**) "when you go grocery shopping, which of the following issues do you consider when choosing one product over another"? A key issue mentioned by the online participants were "price" and "quality of food" (**82.9%**) and "quality of food" (**77.8%**) was only very important for store participants (see **Table 11** for full details).

Table 12: Show the concerns that were selected, in descending order

	In descending order	**Online (%)**		**In descending order**	**In-store (%)**
Price and quality of food	1	82.9	Quality of food	1	77.8
Special offers	**2**	70.2	Price	**2**	75.9
Use by date	**3**	57.4	Use by date	**3**	68.5
Calorie content	**4**	53.2	Special offers	**4**	64.8
Healthiness of food	**5**	51.1	Healthiness of food	**5**	57.4
Fat content	**6**	46.8	Fat content	**6**	50.0
Nutrient content	**7**	31.9	Brand name and calorie content	**7**	44.4
Brand name	**8**	29.8	Salt levels	**8**	27.8
Salt levels	**9**	27.7	Nutrient content	**9**	24.1
Fair trade	**10**	25.5	Fair trade	**10**	20.4
Organically produced	**11**	14.9	Seasonality of food	**11**	18.5
Seasonality of food and impact on the community	**12**	6.4	Organically produced	**12**	16.7
Other	**13**	4.3	Impact on the community	**13**	9.3
			Other	**14**	3.7

Clearly, “price” and “quality of food” (**82.9%**) were very important concerns for online participants whereas, “quality of food” (**77.8%**) was only very important for store participants. A number of other issues also caused concern for both the online and the store participants follows by in descending order “special offers” (**70.2%** online), “price” (**75.9%** store), for both “use by date” (**57.4%** online and **68.5%** store), “calorie content” (**53.2%** online), “special offers” (**64.8%** store), for both “healthiness of food” (**51.1%** online and **57.4%** store), for both “fat content” (**46.8%** online and **50.0%** store), “nutrient content” (**31.9%** online), “brand name” and “calorie content” (**44.4%** store), “brand name” (**29.8%** online), for both “salt levels” (**27.8%**), “nutrient content” (**24.1%** store), for both “fair trade” (**25.5%** online and **20.4%** store), “organically produced” (**14.9%** online), “seasonality of food” (**18.5%** store), “seasonality of food and impact on the community” (**6.4%** online),“organically produced” (**16.7%** store), “impact on the community” (**9.3%** store) and finally “other” (**4.3%** online and **3.7%** store) only.

3.8. Concerns about specific food issues

All participants were asked to select from a list of options any issues related to food shopping bill (**Q16**) which they had concerns. This question also aimed to provide more information in relation to current economic downturn and how this influence consumer food shopping habits (see **Figure 11** for full details).

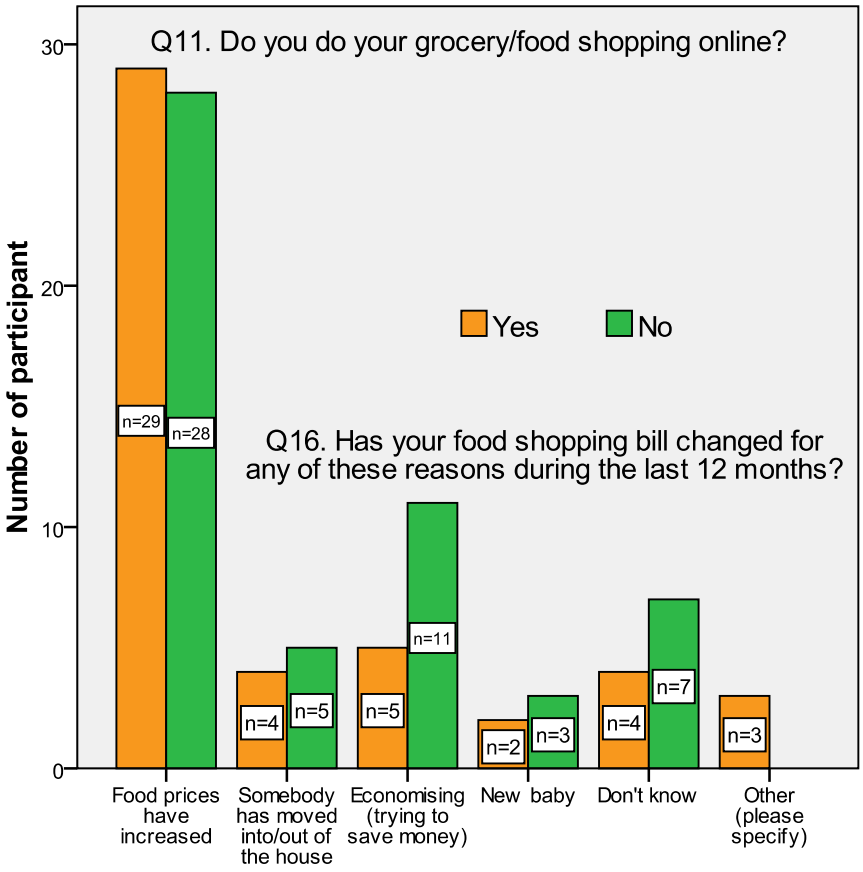

Figure 11: Shows participants concern in relation to food shopping bill

More online participants (**61.7%**) selected "food prices have increased" compared to in-store (**51.9%**) participants. On the other hand more in-store participants selected (**20.4%**) "economising (trying to save money)" compared to online participants (**10.6%**) followed by "don't know" (in-store **13.0%**) to online **8.5%**) only. All other issues were mentioned by less than a quarter of the in-store and the online participants.

3.9. How important is healthy eating to you?

All participants were asked to state how important is healthy eating to them (**Q17**), using a five-point scale ("1 not at all important" to "5 extremely important"). There were relatively few significant differences between the demographic features at this question. Those in the oldest age range (65-74 years) scored 5.0-point scale (**100.0%**) followed by young age range (25-35 years) scored 4.0-point scale (**63.2%**) then old age range (55-64 years) scored 5.0-point scale (**55.6%**). Majority of participants between the age range 35-54 years old (**n**=47) and most of them scored 4.0-point scale (**42.6%**), and then scored 5.0-piont scale (**38.35%**) and the lowest scored was 3.0-point scale (**17.0%**). Whereas, the youngest age range (18-24 years) scored 3.0-point scale (**42.9%**) the highest. Those of who had "university degree/diploma" scored 4.0-point scale (**63.3%**) being the highest, followed by who had "A levels" score of 5.0-point scale (**50.0%**) then "GCSE" score 5.0-point scale (**42.1%**) only. Those of who live in their household with "3" people scored 5.0-point scale (**46.7%**) and score of 4.0-point scale (**43.3%**) was the highest followed by "4" people household score of 4.0-point scale (**38.9%**) then score of 5.0-point scale (**33.3%**). More of those who "retired" scored 5.0-point scale highest (**66.7%**) followed by "students" score of 4.0-point scale (**60.0%**) then who claimed to work full-time scored 4.0-point scale (**57.9%**). Just over half of the online participants scored 4.0-point scale (**51.1%**) [see **Figure 12** for full details].

Figure 12: Shows participants' attitude to healthy eating

Looking at the overall of responses a scale of 4.0-point (**51.1%**) that was scored by the online participants higher than all other scores. Although, the highest point scored by the store participants was scale of 5.0-point (**44.4%**) followed by a scale of 4-point (**31.5%**) then a scale of 3.0-point (**20.4%**). Whereas, the second highest point scored by the online participants were a scale of 5.0-point (**31.9%**) followed by scale of 3.0-point (**14.9%**) only.

3.9. Concerns about specific foods

In the final section (**Q18**), participants were presented with a table that include the 19 different sections of food groups, two examples: “red meat” (e.g. beef, lamb, pork), “fruit juice” (e.g. apple, orange). They were asked to rate, “those foods they regularly buy”: “how important” “a)cost of products”, “b)perceived health claims”, “c)perceived quality” and “d)nutrient content”, using a five-point scale (1”not at all important” to 5”extremely/most important”).

A) Looking at the overall attitude to **“cost of products/foods”**, the highest rate by the online participants was (**mean=62.2**) compared to the in-store participants (**mean=59.4**). Although the highest rate overall to cost from the old age-range “55-64” (**mean=62.2**) followed by young age-range “25-34” (**mean=61-7**) then “35-54” (**mean=60.7**) years (see **Table 13** for full details).

Table 13: Shows overall attitude to “cost of products” by the age ranges

In descending order	Age range	Mean	Total (n)
1	55-64	62.2	14
2	25-34	61.7	19
3	35-54	60.7	47
4	18-24	59.3	18
5	65-74	51.3	3

Table 14: Shows overall attitude to “cost of products” by the level of education

In descending order	Level of education	Mean	Total (n)
1	Other	63.7	23
2	GCSE	62.5	38
3	A level	58.5	10
4	University degree/diploma	57.2	30

Those of who have “university degree/diploma” were overall of their attitude to cost of foods least important (**mean=57.2**) compared to other groups (see **Table 14** for full details).

Table 15: Shows overall attitude to "cost of products" by the employment status

In descending order	Employment status	Mean	Total (n)
1	Currently not working (housewife/househusband)	69.5	10
2	Employee	64.7	4
3	Part time	63.2	25
4	Retired	60.1	9
5	Student	59.8	5
6	Full time	59.5	38
7	Self-employed	49.0	6

Participants who work "full-time" overall their attitude to cost of products was least important (**mean=59.5**) compared to participants who "retired" (see **Table 15** for full details).

Table 16: Shows overall attitude to "cost of products" by the number of people in household

In descending order	Number of people in household	Mean	Total (n)
1	5	71.4	5
2	4	66.3	18
3	1	65.3	8
4	3	61.3	30
5	2	55.7	36
6	More than 5	55.0	4

Participants who live with "5" people household rated the highest for the cost (**mean=71.4**) followed by "4" people in household (**mean=66.0**) then "3" people in household (**mean=61.3**).

There is no statistically significance between the online and the in-store participants ***P*=.307,** between the age-range ***P*=.865,** between the level of education ***P*=.470,** between number of people in household ***P*=.131** and between the employment status ***P*=.307** in relation to the cost of products/foods.

B) "Perceived health claims of food/products" is more important for the physical store participants (**mean=58.4**) compared to the online participants (**mean=56.1**). Those of in the oldest age-range indicated that "health claims of food/products" is more important compared to youngest age range (see **Table 17** for full details).

Table 17: Shows perceived "health claims of food/products" by the age range

In descending order	Age range	Mean	Total (n)
1	65-74	64.0	3
2	55-64	60.5	18
3	35-54	59.3	47
4	25-34	52.7	19
5	18-24	51.7	14

Table 18: Shows "perceived health claims of food/products" by the level of education

In descending order	Level of education	Mean	Total (n)
1	Other	61.4	23
2	GCSE	58.3	38
3	University degree/diploma	56.7	30
4	A level	47.6	10

Interestingly, participants who had have "A level" (**mean=47.6**) and "university degree/diploma" (**mean=56.7**) fewer rate the "health claims of food/products" compared to "GSCE" (**58.3**) and other (**mean=61.4**)

Table 19: Shows" perceived health claims of food/products" by number of people in household

In descending order	Number of people in household	Mean	Total (n)
1	5	67.8	5
2	1	63.0	8
3	More than 5	60.7	4
4	3	59.0	30
5	2	56.6	36
6	4	50.1	18

Participants who live with "5" people in household (**mean=67.8**) and "1" person household (**mean=63.0**) rated highest for "health claims of food/products" compared to who live with "4" people in household (**mean=50.1**) and live with "2" people in household (**mean=56.6**).

Table 20: Shows "perceived health claims of food/products" by the employment status

In descending order	Employment status	Mean	Total (n)
1	Other	65.2	4
2	Employee	63.5	4
3	Currently not working (housewife/househusband)	61.9	10
4	Retired	61.2	9
5	Part time	60.5	25
6	Student	55.0	5
7	Self-employed	53.3	6
8	Full time	52.7	38

A similar trend can be seen across the employment status, participants who work "full time" overall their attitude to "perceived health claims" was least important (**mean=52.7**) compared to participants who work "part-time" (**mean=60.5**).

There is no statistically significance between the online and the in-store participants ***P*=.544,** age-range ***P*=.195,** between the level of education ***P*=.112,** between the number of people in household ***P*=.128** and between the employment status ***P*=.280** in relation to "health claims of food".

C) "Perceived quality of food" was slightly more important for the store participants (**mean=68.1**) compared to the online sample (**mean=67.6**). But, there is no statistically significance between the online and the in-store participants ***P*=.846** in relation to "quality of food". However, there is statistically significance difference between the age-range and overall attitude to "quality of food" ***P*=.004** (see **Table 21** for full details).

Table 21: Shows "perceived quality of food" by the age range

In descending order	Age range	Mean	Total (n)
1	35-54	72.7	47
2	65-74	70.3	3
3	55-64	68.4	18
4	18-24	61.2	14
5	25-34	60.0	19

Those of age-range "35-54" were rate highest (**mean=72.7**) follow by "65-74" in descending order (**mean=70.3**), "55-64" (**mean=68.4**), "18-24" (**mean=61.2**) and finally "25-34" (**mean=60.0**) years.

Table 22: Shows "perceived quality of food" by the level of education

In descending order	Level of education	Mean	Total (n)
1	Other	71.2	23
2	GCSE	67.9	38
3	University degree/diploma	67.7	30
4	A level	60.7	10

Those who have "other" qualification and "GCSE" achievements', their overall attitude to quality of food was the most important (**mean=71.2**) compared to participants who have "university degree/diploma" (**mean=67.7**) and "A levels" (**mean=60.7**).

Table 23: Shows "perceived quality of food" by the number of people in household

In descending order	Number of people in household	Mean	Total (n)
1	5	81.0	5
2	2	68.3	36
3	3	67.6	30
4	1	67.2	8
5	More than 5	66.0	4
6	4	64.6	18

Participants who live with "5" (**mean=81.0**) and "2" (**mean=68.3**) people in household rated highest compared to participants who live with "5+" (**mean=66.0**) and live with "4" (**mean=64.6**) people household.

Table 24: Shows "perceived quality of food" by the employment status

In descending order	Employment status	Mean	Total (n)
1	Other	86.5	4
2	Part time	71.7	25
3	Employee	68.3	4
4	Currently not working (housewife/househusband)	68.2	10
5	Self-employed	66.5	6
6	Full time	65.7	38
7	Retired	65.5	9
8	Student	55.0	5

Participants' attitude who tick the "other" option box (**mean=86.5**) and who work "part-time" (**mean=71.7**) to quality of food was most important compared to participants who are working "full-time" (**mean=65.7**) and "retired" (**mean=65.5**).

There is statistically significance difference between the employment status and overall attitude to "quality of food" ***P*=.043**. Whereas, there is no statistically significance between the education level ***P*=.279** and between the number of people in household ***P*=.378** in relation to "perceived quality of food".

D) Once again, physical store participants were more concerned about "**nutrient content**" of food (**mean=64.0**) than the online participants (**mean=63.4**). Those of between age-range "65-74" (**mean=70.6**) and "35-54" (**mean=66.4**) rated the highest for the "quality of food" (see **Table 25** for full details).

Table 25: Overall attitude to "nutrient content" by the age range

In descending order	Age range	Mean	Total (n)
1	65-74	70.6	3
2	35-54	66.4	47
3	55-64	66.2	18
4	18-24	58.2	18
5	25-34	57.7	19

Table 26: Overall attitude to "nutrient content" by the level of education

In descending order	Level of education	Mean	Total (n)
1	Other	67.6	23
2	GCSE	65.5	38
3	University degree/diploma	61.5	30
4	A level	54.6	10

Table 26 indicated that participants who tick the "other" option box (**mean=67.6**) and "GCSE" achievements' (**mean=65.5**) were the highest rate for the "nutrient content" of food compared to participants who have university degree/diploma (**mean=61.5**) and A level (**mean=54.6**).

Table 27: Overall attitude to "nutrient content" by the number of people in household

In descending order	Number of people in household	Mean	Total (n)
1	5	74.0	5
2	More than 5	68.0	4
3	3	64.5	30
4	1	63.1	8
5	2	63.1	36
6	4	60.3	18

Table 27 show that participants who live with "5" people in their household (**mean=74.0**) were the highest rate for the "nutrient content" of food compared to participants who live with "2" (**mean=63.1**) and "4" (**mean=60.3**) people in their household.

Table 28: Overall attitude to "nutrient content" by the employment status

In descending order	Employment status	Mean	Total (n)
1	Other	74.5	4
2	Retired	68.0	9
3	Part time	67.4	25
4	Employee	63.7	4
5	Currently not working (housewife/househusband)	63.3	10
6	Full time	61.1	38
7	Self-employed	59.0	6
8	Student	55.6	5

Participants who tick the "other" option box (**mean=74.5**), "retired" (**mean=68.0**) and works "part-time" (**mean=67.4**) were highest rate for the "nutrient content" of food.

There is no statistically significance between the online and the in-store participants ***P*=.531,** between the age-range ***P*=.096,** between the level of education ***P*=.079,** between the number of people in household ***P*=.585** and between the employment status ***P*=.359** in relation to "nutrient content" of food.

~DISCUSSION~

Chapter 4: Discussion

4.1. Introduction

This study is among the first to compare online grocery shopping environment with the physical store environment using consumers' environmental characteristics and food shopping habits. A descriptive cross-sectional survey design was used to collect data retrospectively at a single time point. The data collector approached adults in Wigan town centre (Manchester) and verbally asked participants to complete a self administered questionnaire by randomly selected participants.

This chapter will discuss the key findings from the results of this study and integrate these results with the literature. The efficiency of each method will also be evaluated by analysing the extent to which the method chosen had influenced the results. This chapter will also include discussion on the limiting factors in the study, the conclusions that have been drawn and finally recommendations for further research.

4.2. Discussion

Despite significant current public concern about the environmental impacts of food production and the distribution, there is very little research of the global effects of consumers' characteristics on food shopping habits (Weber & Matthews, 2008; Andrews & Currim, 2004). This is the first known attempt to compare how consumer environmental characteristics affect the choice between the traditional and the online grocery shopping. Cude and Moranosky (2000) characterize the online shoppers as shopping avoiders, (higher and intermediate managerial professionals), they dislike grocery shopping who lack time but are technology friendly, whereas the traditional shoppers have time for grocery shopping, who are technology avoiders, they enjoy physical shopping (mainly housewives and consumers who have limited education).Based on the data from both the physical

store and the online respondents' socio-demographic variables include age, education and household size which influence environmental characteristics in relation to food shopping. However, there was no variation between the physical store and the online participants in relation to environmental characteristics when shopping for food. For participants shopping via internet and in-store, the use of "re-useable carrier bags when food/grocery shopping" is clearly a key issue. The results show it came first in the list of environmental characteristics in relation to food shopping and the second was "buying free range food", followed by "buying local products" and "buying fair trade" (e.g. ensures a fair deal for producers in developing countries) came fourth in the list of concerns by the majority of respondents. In particular the age range 35-54, higher educated, who work full time, live with 2 and 3 people in household and participants who were female are concerned more about environmental issues when shopping for food/groceries. On the other hand, the oldest "65-74" and the youngest age ranges "18-24", "GCSE" educated, who are "currently not working", those with "5" and "more than 5" people in their household are least concerned about environmental issues (e.g. organically produced, free range, food miles, seasonality of food, etc.)

All participants were asked "who do you shop for?" and to state the "level of responsibility they had for the grocery shopping in their household". The majority of participants (**63.4%**) "buy food for you and others in the house" (e.g. family, housemates, etc,) and ¾ for both the online (**76.6%**) and the physical store participants (**75.9%**) were "responsible for all/most of the food shopping". Age range, the level of education, the employment status and the number of people in the household related to the level of responsibility participants had for the food shopping. In particular, participants across a broad range of ages (25-64), with lower education achievement (GCSE, A level and other), those currently not working, retired or working part time and living in a household size of one person, or four and five people are "responsible for all/most of the food/grocery shopping".

Educational level, an indicator of SES, has been a major influence on consumer knowledge in relation to answering the "FOOD MILES "question. Due to the environmental impacts of "FOOD MILES" all participants were asked "what do you understand by the term "FOOD MILES". All participants who

had a “university degree/diploma” or “A levels” (**40.0%**) answered this question more correctly than those with “GCSE” (**10.5%**) or “other” (**21.7%**). Some correct answers from participants who had higher educated are: *‘the distance food travels from production to consumption’ ‘how far food has travelled to get to the supermarkets and your home’ ‘ transportation from producer to consumer’ ‘cost of transport and fuel to get food to shop’ ‘distance taken getting from origin to home’*. Whereas some wrong answers are: ‘*where grown to shop’ ‘distance from where grown’ ‘imported foods’ ‘transportation time’ ‘carbon footprint’*.

The results from this study show that participants who are better educated were more aware of ‘FOOD MILES’ than the participants who had limited education. Some correct answers from participants with a lower education (GCSE) are: ‘*how far food has travelled to get to supermarkets’ ‘combined distance of product from production to consumers’ ‘distance food come from’ ‘the number of miles food travels to get to you’*. Incorrect answers are: *‘no idea’ ‘don’t know’ ‘not familiar with food miles’ ‘sorry I have never heard of this’ ‘does it mean people shopping habits’ ‘shopping for best prices’ ‘how far you go to shop’*.

There are important variations between the more educated and the lower educated participants in relation to wrongly answering this question. All wrong answers from respondents who had better education were mostly related to “FOOD MILES”. On the other hand, all wrong answers from ¾ of participants with lower education indicated that they “don’t know" anything about this term and overall and there are no connections to the “FOOD MILES” question from this group. With the globalization of food industry in the last few decades, the concept of “food miles” has gained more of an understanding by environmentalists. To most consumers it’s a new term (Wynen & Vanzetti, 2008). Therefore, the majority of consumers are not aware of this term and this could negatively influence their knowledge in relation to this topic. For example a qualitative study was conducted to investigate “food miles” the concerns by French consumers (Sirieix, Grolleau & Schaer, 2008), found that most who buy locally grown organic food and buy imported organic food, buy for other reasons than reducing “food miles”. Most importantly a large proportion of consumers were not concerned

by “food miles” or “environmental impacts” when they did their food shopping (Sirieix et al. 2008). A similar study was conducted by Pirog and Larson (2007) in the US to investigate the consumer perceptions regarding food safety, product origin, greenhouse gas (GHG) emissions in the food system, benefits of local and organic food. This study found that overall respondents were more concerned about the safety of global food production and put more confidence in the safety of regional or local food product. Nevertheless, the majority of the study participants wrongly answered the questions in relation to GHG and lacked knowledge with regards to issues such as (“last mile” the last link in the supply chain to the home). Furthermore, the study suggests that there is a need for raising the general public’s awareness of environmental issues around food, through education, there has been media campaigns and increasing funding for activist groups in the US in order to empower the consumer with regards to sustainable consumption (Pirog & Larson, 2007).

As mentioned above despite the growing field of sustainable consumption and sustainable food shopping, there is a lack of information available to consumers on the environmental impacts of their consumptive choices (Weber & Matthews, 2008). For example, a recent study suggested that most physical store shoppers are not willing to shop online for groceries and majority of them are aware of the “last mile” and yet they spend more time and space for domestic road transport to supermarket (Teller, Kotzab & Gant, 2007). Furthermore, this study also shows that higher educated participants were more aware of “food miles” but only one participant buy grocery/food shopping via internet for reduced “food miles”.). Our study and other studies show that consumers are still not able to perceive the important difference between online grocery and store grocery shopping.

Nevertheless, Weber and Matthews (2008) argued that the consumer needs to be educated on how to change their dietary habits instead of encouraging consumers to buy local products in order to reduce the environmental impacts of consumption. They suggested that substituting animal protein with plant-based protein for one day per week is more effective to reduce GHG than buying locally and organically produced food (Weber & Matthews, 2008). A similar conclusion was reached by Pretty et al (2005) when investigating the environmental cost of the UK food basket. The study

concluded that producing livestock is more costly and pollutes more than plant-based food. According to SDC (2003) the majority of UK consumers are concerned about environmental issues (e.g. reducing ecological footprints, etc) but they regard it as a very low priority in their current shopping and consumption choices. Interestingly, the majority of my study respondents indicated that "buy local products" and "buy fair trade" were the second most important environmental issues in relation to food shopping which they have concerns about. But, on the other hand "buy organic food" and especially "avoid buying food that is not in season" had the least priority by the majority of respondents.

This study's result shows that the educational level to some extent influence environmental characteristics in relation to food shopping. For example my study shows that respondents who have higher education "use-re-useable carrier bags when food shopping" **83.3%**, "buy free range food" **70.0%**, "buy local products" **50.0%** and "buy fair trade" **43.3%** higher than the respondents who have lower education. The respondents who have "GCSE" achievement "use-re-useable carrier bags when food shopping" **65.8%**, for both "buy free range food" and "buy local products" **57.9%** and finally "buy fair trade" **42.1%**. There are also significant differences between the respondents who have higher education in relation to "buy organic food" (**43%**) and the respondents who have "GCSE" achievement (**26.3%**) only. An early study conducted by Giffard and Bernard (2006) to investigate the self-reported influence of message framing on the purchase of organic food in US, they found that information and knowledge is more significant than demographic variables. A recent paper by Seyfang (2007) cited a mixed method approach which include, site visits, semi-structured interviews and a customer survey to investigate the effectiveness of initiatives at achieving sustainable consumption in Norfolk, UK. The study suggested that most consumers are concerned about sustainable consumption and strongly supported the localisation of food, reducing ecological footprints, building communities, acting collectively and building new institution alternatives to globalised food supply chains. Nonetheless, the main obstacle is financial and this operates at the international, national, regional, local and individual levels to put it into practice (Seyfang, 2007). A

similar study was conducted by Essoussi and Zahaf (2008) in Canada to investigate consumer's perceptions, values and motivations in relation to organic food in community organic food markets. The study results show that consumer trust is higher for organic food and for local products compared to supermarket food. But, due to economic, cultural, dietary habits and accessibility constraints, consumers give priority to conventional products when making the decision to buy organic and local food (Essoussi & Zahaf, 2008).

Food shopping practices are an important aspect of balanced diet. Evidence shows that local food environment and community nutrition environments (e.g. availability, cost, quality, etc.) significantly influence people's food shopping decisions as well as long term health (Glanz, Sallis, Saelens & Frank, 2007; Moore, Roux & Brines, 2008b). Furthermore, a variety of micro-environments (e.g. schools, workplaces, homes, restaurants, etc.), macro-environments (e.g. food industry, government, societal attitudes, etc.), the level of education and the SES have an important influence on people's food shopping decisions too (Lawrence & Barker, 2009).

In this study the larger proportion of the online participants were "female" (**81.6%**), age range between "35-54" (**42.6%**), who had "university degree/Diploma" (**44.7%**), "work full time" (**44.7%**) and live with "2" and "3" people in household (**31.0%**). Similarly, the majority of the physical store participants were also "female" (**86.0%**) and aged between "35-54" (**50.0%**) however the majority of them educated up to "GCSE" (**44.4%**), "work full" (**31.5%**) or "part time" (**27.8%**), "retired" (**13.0%**) and live only with "2" people in household (**38.9%**). Nearly three quarters for both the online and the store participants (**72.2%**) undertook a main food/grocery shop "once a week". The great proportion of the online and the store participants used "large supermarkets for food/grocery shopping" followed by "small grocery" or "corner shops". All participants were asked when they go grocery shopping, which of the following issues they consider when choosing one product over another. Two key issues was mentioned by the online participants, "price" and "quality" of food (**82.9%**) and only "quality" of food was very important for store participants (**77.8%**). The results from the (**Q16**) show that more online participants had concerns about food "price" compared to in-

store participants. In contrast to our results, Andrews and Currim (2004) found that online consumers are less price sensitive, prefer broader choice and more concerned about brand name compared to store shoppers.

Only the online participants were asked what percentage and why they do their food shopping via the internet. Over half of the participants did food shopping between "25-50%" (**57.1%**) followed by "<25%" and then the substantial minority of participants did between ">50-100%". There is no association between the levels of education and the household size in relation to percentage of food shopping. There was little variation between the physical store and the online participants' concern about issues relating to food and specific food issues that could influence their food shopping habits. However, there is statistically a significant difference between the "age range" ***P*=.004** and the "employments status" ***P*=043** in relation to "quality" of food. Particularly, the respondents between the "age ranges" 35-74, work "part time" or "retired" were more concerned about issues relating to food and specific food issues that could influence their food shopping habits.

Our study shows that over half of the respondents who work "full time" did food shopping via the internet for "efficiency (**57.1%**) followed by "price comparability" (**33.3%**) then "no time for store shopping" (**23.8%**) and finally for "cost savings" (**19.0%**). An early, study conducted by Robertson, Murphy and Purchase (2005) showed the "convenience" and to "save time" are the main reasons to shop online over store shopping. Verhoef and Langerak (2001) also found that there was a positive relationship between time pressure and the intention to buy food online. In literature, the common reasons for online shopping are "convenience" and "time saving" but, only minority of our respondents (**23.8%**) indicated that for "time saving". The difference between this research and other studies may have been influenced by the methods or sample size and composition.

4.4. Conclusion

Numerous studies have suggested that the selection of food by human groups is influenced by many factors (e.g. cultural, SES, education, biological, physiological, personal aspects, tradition, convenience, environment, taste, nutrition, appearance, safety, price, etc) [Lusk & Briggeman, 2009; Scarpello, Poland, Lambert, Wakeman, 2009; Neci, Carrus, Caddeo & Meloni, 2008; Wiig & Smith, 2008; Story & French, 2004; Essoo & Dibb, 2004; Fieldhouse, 1986, pp. 4-8]. Furthermore, according to a systematic review family's/parents' eating and shopping habits play an important part on establishing future consumers' food shopping habits (Hastings, et al. 2003; Gram, 2010). Those habits also established at this stage are long lasting and very resistant to change (Gotschi, Vogel, Lindenthal & Larcher, 2010). Another systematic review of 59 intervention studies showed that there is an association between fruit, vegetables consumption and non-communicable diseases (Knai et al. 2006). Therefore, the type of food people buy and access to healthy food are a prerequisite for healthy eating as well as wellbeing.

The results obtained in this study showed that there was no variation between the online and the physical store participants in relation to environmental characteristics when shopping for food/groceries. However, even so, just under ¾ of all participants "use-re-useable carrier bags" (**71.3%**), "buy free range food" (**63.4%**), "buy local products" (**59.4%**), "buy fair trade" (**41.6%**), "buy organic food" (**29.7%**) and finally "avoid buying food that is not in season" (**8.9%**) were considered on environmental issues when shopping for food/groceries. A similar pattern emerges when participants were asked to consider when choosing one product over another when shopping for food/groceries. Over ¾ of participants consider "quality of food" (**80.2%**) followed by "price" (**79.2%**), "special offers" (**67.3%**), "use by date" (**63.4%**), "healthiness of food" (**54.5%**), both "fat content" and "calorie content" (**48.5%**), "brand name" (**37.6%**) both "salt content" and "nutrient content" (**27.7%**), "fair trade" (**22.8%**), "organically produced" (**15.5%**), "seasonality of food" (**12.9%**)

and finally “impact on the community where food comes from” (**7.9%**) were considered to be the most important.

However, those within the age range of “35-54”, highly educated and who work “full-time”, live with “2” and “3” people in household are more engaged with issues related to shopping behaviour.

According to a systematic review (Kamphuis et al. 2006) people who have good household income, married or have children and good local food availability prefer and access to more healthy diet compared to people who live with lower income, who are single and have poor local food availability.

Secondary hypothesis of this study was to compare the food shopping habits between consumers who buy online against those who buy in the store. This study shows that there is no statistical significance between the physical store and the online participants’ in relation to food shopping habits. The vast majority of respondents undertook a main food shop “once a week” and used “large supermarkets” for most of their food/grocery shopping followed by “small grocery” or “corner shop”. A similar study was conducted by Yoo et al (2005) to investigate the frequency of food shopping at supermarkets, convenience stores and restaurants in the Houston, Texas, USA. In contrast to this study, they found that the ethnicities, level of education and household size significantly influence consumers purchasing behaviour as well as the type of outlet used. The difference between this research and other study may have been influenced by the methodology or the study objectives.

Nevertheless, the majority of respondents who shop online were “female” (**81.6%**), have “university degree/diploma” (**44.7%**), age range between “35-54” (**42.6%**), work “full time” (**44.7%**), live with “2” and “3” people in household (**31.0%**) and (**72.2%**). Similarly, the majority of the physical store participants were also “female” (**86.0%**) and aged between “35-54” (**50.0%**) however the majority of these were only educated up to “GCSE” (**44.4%**), work “full (**31.5%**) or part time” (**27.8%**), “retired” (**13.0%**) and live only with “2” people in household (**38.9%**). An early study conducted by Kurnia and Chien (2003) found that people with higher education had a broad knowledge of computer skills and

were aware of the benefits of shopping online. They further suggested that satisfaction with the web, easy to use, convenience and trust directly influenced the online shoppers in Australia. Other writer suggests (Hansen, 2006) that if consumers are faced with high online complexity, they do not repeat/continue buying online grocery. Also the results obtained by Turrell and Kavanagh (2005) suggest that there is a strong relationship between SES and the dietary knowledge and food purchasing behaviour too. Similarly, this study's findings suggest that not only participants who have higher educated are more aware of environmental issues; they also use more e-grocery as well as other outlets for food shopping. A similar study carried out in Netherlands to investigate the impact of spatial variables on e-shopping in general found that people who live in a very strongly urbanised and with low shop accessibility bought more products online (Farag, Weltevreden, van Rietbergen & Dijst, 2006). Similar to my study result, a most recent review found that e-grocery less interested by the majority of UK consumers but on the other hand, e-shopping widely used for retail and leisure (Guy, 2009).

There was little variation between the physical store and the online participants' concern about issues relating to food and specific food issues that could influence their food shopping habits. For instance, "healthy eating" (**51.1%**) and both "price" and "quality of food" (**82.9%**) were very important for online participants whereas, "quality of food" (**77.8%**) and "healthy eating" (**44.4%**) only very important for store participants. Interestingly, the youngest age range "18-24" remained the least concerned about environmental and social issues when shopping for groceries/food. However, this may have been by the sample size influenced by small sample size (student, **n**=5), compared to other participants groups.

The results obtained from this study showed that socio-demographic variables include "age range" (***P*=004**) and "employment status" (***P*=043**) statistically and significantly influence participants overall attitude to "perceived quality of food". In particular age range "35-54" or older, participants who work "part time" and who thick the "other" option box rated "perceived quality of food" the highest.

This study shows that when buying groceries/food, the vast majority of participants are most likely to consider “quality of food”, followed by economic issues and then “healthiness of food”. On the other hand, the environmental issues or sustainable diet are less likely to be taken into account by the majority of this study’s participant. Also, the results obtained by Soron (2010) suggest that it is hardly difficult for consumers to meet the sustainable consumption within everyday environments and further suggest that this needs realistic international and national approach in order to get the message across the population.

Overall this study result shows that are no significant associations between the food shopping habits, between the environmental characteristics who buy food/groceries via internet those of consumers who buy in the store. However, significant associations were found between socio-demographic features in relation to environmental issues (e.g. organically produced, free range, food miles, seasonality of food) as well as economic issues (e.g. price, special offers, quality of food, brand name). Participants from age range “35-54” or older, higher educated, who work “full time”, live with “2” and “3” people household were more considered towards environmental and economic issues when shopping for food/groceries when compared to youngest aged “18-24”, the least educated, who were “unemployed”, those with “5” or “5+” people in their household.

4.4. Efficiency of methods used

The validity of a method refers to its ability to measure what it is intended to be measured sufficiently. The aim of this study was to compare online with in-store grocery shopping in terms of consumers' environmental characteristics and food shopping habits. In order to assess food shopping habits validated questionnaires are often used. However no questionnaire was available on this topic for the purpose of this study, therefore questions were adopted from previously validated questionnaires for research on food shopping habits (FSA, 2007) and perceived importance of consumer perception of nutrition and health (Van Trijp & Van der Lans, 2007). To determine the

validity of the research questionnaire, a pilot study was carried out on a sample of n=20 people from Wigan town centre. The piloted questionnaire ensured that regardless of who responds and to whom they respond, the questionnaire accurately measured awareness, was formatted correctly, was understandable and reliable (Olsen, 2009). Therefore, the questionnaire successfully measured consumers' environmental characteristics and food shopping habits. Nevertheless, the validated questionnaire is more appropriate for this study and a sample size power calculation should be applied too.

In order to be able to reach the online participants and to maximize the diversity of respondents two different location were used (Wigan town centre (Manchester) and Celly's Hairstyle which is based in Wigan town centre). Furthermore, the data was collected at different times of the day on different days and weekends in order to reach different socioeconomic groups. The location was appropriate for this study purpose; however despite the significant amount of time and the effort spent, the data collector had a great difficulty reaching the online participants. Moreover, this group of people was not keen to spend 15-20 minutes to answer questionnaire and are very rarely present in shopping centre.

Only ½ of online participants did a food shopping between 25-50% moreover, there was only substantial minority of participants did between >50% and >75-100%. This increased concerns about the study location and the likelihood of sampling representativeness. Future studies should attempt to collect data in close proximity to shopping events as it is more appropriate or use different methods such as collection of grocery store receipts, surveys of previous week's shopping practice or collect data through internet.

4.5. Limitation in the study

Most methods of data collection are likely to have some limitations (problems with the researchers design) and delimitations (problems beyond the researchers' control) associated with them. During the course of this study there were some limitations and delimitations that were observed which gave rise to issues concerning the reliability and validity of the study design.

The time scale to conduct the research was considered a limiting factor. Results may therefore not be representative of the usual food shopping habits. This study measured the environmental characteristics and food shopping habits at one point in time. It may be worthwhile to study food shopping habits over long period of time in order to be able to take into account the dynamics in consumer behavioural and attitudinal patterns.

Furthermore, e-grocery is still evolving and the online shopper needs to be studied for longer periods of time and the frequency of online shopping. For example, almost ½ of online participants used other outlets for food/grocery shopping besides using e-grocery. Therefore, results may suffer from a lack of presentation of online sample.

The proportion of the youngest age ranges (18-24) was considered a limiting factor. Results may therefore not be representative of the youngest consumer groups.

Third limitation of this study is the single location (Wigan), thus the results of this study could be biased towards the Wigan grocery consumers. It is expected that Wigan grocery consumers would not behave very differently from those in other parts of UK. However, according to the TAPHO (2010) report, the health profile and the deprivation level in Wigan borough is significantly worse than other areas across England. Thus, this could be skewing the generalization of the findings.

Another limitation of this study is the study design. This study provides a snapshot of online and physical store shopper's behaviour in relation to environmental issues and food shopping habits rather than a longitudinal study.

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4.7. Recommendations for further study

Longer period studies of grocery shopping habits that examine the effects of shopping via internet on environmental characteristics of grocery shoppers and diet quality are required.

Future research could incorporate data from across different retails (e.g., Tesco, Asda, Morrison, Marks & Spencer, etc), from different cites and regions to compare online with in-store grocery shopping in terms of environmental characteristics and food shopping habits.

Future studies could test consumer behaviour in different countries in order to identify differences and similarities in international and global consumer behaviour when shopping over the internet.

This research used a single respondent as a household representative. Since grocery/food buying concerns the entire household, this procedure assumes that the selected respondent provides answers that are representative of the household's opinion. Therefore, future research may include household representatives.

Appendix 1

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Appendix 2

TITLE: A COMPARISON OF PHYSICAL STORE VERSUS ONLINE GROCERY SHOPPING HABITS BASED ON CONSUMERS' ENVIRONMENTAL CHARACTERISTICS

GENERAL INSTRUCTIONS FOR COMPLETING THIS QUESTIONNARIE

- The questionnaire consists of 3 pages and should take approximately 20 minutes to complete.
- All the details you provide will be kept strictly confidential and anonymous.
- Answer each question as best as you can. Estimate if you are not sure. A guess is better than leaving a blank.

SECTION 1: FIRSTLY I WOULD LIKE TO ASK YOU A FEW QUESTIONS ABOUT YOURSELF (please tick as appropriate).

1. Gender ☐ Male ☐ Female

2. Age range
- ☐ 18-24
- ☐ 25-34
- ☐ 35-54
- ☐ 55-64
- ☐ 65-74
- ☐ 75+

3. Level of education
- ☐ G.C.S.E
- ☐ A Level
- ☐ University Degree/Diploma
- ☐ MSc or PhD
- ☐ Other

4. Number of people in household
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ more than 5

5. **What is your employment status? (tick only one)**
- ☐ Full time
- ☐ Part time
- ☐ Self- employed
- ☐ Student (full-time or part-time)
- ☐ Employee
- ☐ Currently not working (housewife or househusband)
- ☐ Retired
- ☐ Other

6. When you shop for food you normally Buy (tick only one)……
- ☐ For yourself only
- ☐ For you and a partner/spouse
- ☐ For you and others in the house (e.g. your family, housemates, etc.)
- ☐ Not applicable

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SECTION 2: ENVIRONMENTAL ISSUES AND SHOPPING HABITS

7. **Do you choose any of the following when you are doing grocery/food shopping? (Please tick all that applies).**
   - ☐ Buy fair trade (e.g. ensures a fair deal for producers in developing countries).
   - ☐ Buy organic food
   - ☐ Buy local products
   - ☐ Avoid buying food that is not in season
   - ☐ Buy free range food (e.g. meat, eggs, etc.)
   - ☐ Use-re-useable carrier bags when food/grocery shopping
   - ☐ None of the above

8. **What do you understand by the term FOOD MILES?**

9. **Thinking about food/grocery shopping, which best describes the level of responsibility you have for the shopping in your household? Tick only one.**
   - ☐ Responsible for all or most of the food/grocery shopping
   - ☐ Responsible for about half of the food/grocery shopping
   - ☐ Responsible for less than half of the food/grocery shopping

10. **Where do you buy most your household grocery shopping? Please tick all that apply.**
   - ☐ Large supermarket (e.g.Tesco)
   - ☐ Small grocery stores or corner shops
   - ☐ Local specialist shops (e.g. butchers, green grocery shops)
   - ☐ Over the internet (e.g. Tesco online, Ocado)
   - ☐ Farmer markets (e.g. locally produced products)
   - ☐ Farmer shops
   - ☐ Street markets (e.g. open market and including products from abroad)
   - ☐ Other

11. **Do you do your grocery/food shopping online? If you answered the question 11 as NO please go to question 14.**

   ☐ No ☐ Yes

12. **If you answered the question 11 as YES what percentage do you do your grocery shopping online? Tick only one please.**

   ☐ <25 % ☐ 25 - 50 % ☐ >50 - 75 % ☐ >75 - 100 %

PTO

13. Why do you do your grocery/food shopping online? Please tick all that apply.

☐ Reduce food miles ☐ Efficiency ☐ Cost savings ☐ Price comparability
☐ Live in rural area ☐ Housebound ☐ No time for store shopping
☐ Other

14. Thinking about online/store shopping, how often do you do a main shop for your household grocery/food shopping? Tick one only please.

☐ Every day ☐ Every 2-3 days ☐ About once a week
☐ Once a month ☐ A couple of times a month ☐ Less often

15. When you go grocery shopping, which of the following issues do you consider when choosing one product over another? Please tick all that apply.

☐ Price ☐ Nutrient content ☐ Special offers ☐ Brand name
☐ Salt levels ☐ Fat content ☐ Seasonality of food ☐ Calorie content
☐ Quality of food ☐ Organically produced ☐ Healthiness of food ☐ Use by date
☐ Fair trade ☐ Other ☐ Impact on the community where food comes from (e.g. creation of jobs / benefit to local community

16. Has your food shopping bill changed for any of these reasons during the last 12 months? Please tick only one.

☐ Food prices have increased
☐ Economising (trying to save money)
☐ New baby
☐ Somebody has moved into/out of the house
☐ Don't know
☐ Other

17. How important is healthy eating to you? Please circle one answer.

NOT AT ALL IMPORTANT				**EXTREMELY IMPORTANT**
1	**2**	**3**	**4**	**5**

PTO

18. For those foods that you regularly buy, please indicate how important the factors; a) cost of products, b) health claims, c) quality and d) nutrient content are for you. Please rate importance on a scale of 1-5 for each factor, where 1 = not at all important, and 5 = extremely (or most) important.

All the food and groceries that you buy this includes:	a)Cost (1-5)	b)Perceived Health Claims (1-5)	c)Perceived Quality (1-5)	e) Nutrient Content (1-5)
Red Meat (e.g. beef, lamb, pork)				
Poultry (e.g. chicken, turkey)				
Fish (e.g. salmon, mackerel)				
Fruit (e.g. apple, orange, grape)				
Vegetables (e.g. pepper, carrot)				
Dairy product (e.g. milk, cheese)				
Bread (all type of bread)				
Pulses (e.g. lentils, chickpeas)				
Starchy foods (e.g. pasta, rice)				
Fat/butter/margarine				
Coffee and tea				
Crisps and confectionary				
Tinned food (e.g. baked beans)				
Frozen food (e.g. corn, peas)				
Soft Drink (e.g. coca cola)				
Alcohol (all types)				
Ready meals (e.g. pizza)				
Nuts & Seeds (e.g. pistachio, walnut, pumpkin seed)				
Fruit juice (e.g. apple, orange)				

Thank you for your co-operation!

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Appendix 3

PARTICIPANT INFORMATION SHEET

Title of Study: A comparison of physical store versus online grocery shopping habits based on consumers' environmental characteristics.

You are being invited to take part in a research study. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Please take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of this study?

The purpose of this study is to compare online versus in-store grocery shopping in terms of consumers' environmental characteristics and shopping habits.
We aim to do this by;

- Collecting data on consumers' characteristics and food shopping habits from a single shopping occasion between consumers who buy on-line against those who buy in the store, using a questionnaire. The study will take place over four months; however it will only involve you for 15 to 20 minutes to complete questionnaire.

Why have I been chosen?

The study aims to include a broad cross section of individuals who are being a physical or online grocery shopper, aged 18+ and being in charge of grocery shopping regularly.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you will be given this participant information sheet to keep. If you decide to take part you are free to withdraw at any time, and a decision not to take part will not affect you in any way.

What will happen to me if I take part?

If you decide to contribute to the project, a number of questions will be asked and is optional to answer. All answers will be valid and extremely useful to provide better understanding of consumers' food shopping environment.

What are the possible disadvantages and risks of taking part?

When participating in this study, there are no risks anticipated, however asking questions may cause a slight inconvenience.

What are the possible benefits of taking part?

The study will not directly benefit you but may benefit people for designing public health nutrition intervention and nutrition education programmes, especially in relation to future food consumption pattern.

What if something goes wrong?

If you desire to complain or have anxiety about any features in the way you have been approached during the time questions were asked, please contact Professor Sarah Andrew, Dean of the Faulty of Applied and Health Sciences, University of Chester, Parkgate Road, Chester, CH1 4BJ. Tel: 01244 513055.

Will my taking part in the study be kept confidential?

All information which is collected about you during the course of the research will be kept strictly confidential so that only the researcher carrying out the study and her supervisor will have access to such information.

What will happen to the results of the research study?

The results from the questionnaires will be analysed and put into software. Individuals who participate will not be identified in any subsequent report or publication.

Who is organising and funding the research?

The research is partly funded by the Biological Science Department of the University of Chester.

Who may I contact for further information?

If you would like more information about the study before you decide whether or not you would be willing to take part please contact: Gulten Bozkurt at the Biological Sciences Department of the University of Chester,

Biological Sciences, University of Chester, Park gate Road, Chester, CH1 4BJ. Tel: 01244 513055

Thank you for your time and consideration for this research

Appendix 4

Eating for Good Health

Making healthy eating easier to understand

The plate shows how much of what you eat should come from each food group. This includes everything you eat during the day, including snacks.

include 5 a day from a variety of fruit and vegetables

Try to include at least one starchy food with each of your main meals. Include more wholegrains/ high fibre foods.

Include sources of protein such as chicken, fish, eggs, lean varieties of meat. Try to have meat free days with pulses, beans and tofu. 2 servings daily

We all need to cut down on fatty and sugary food. e.g. pastry, sweets, chocolates and soft drinks. Try and select lower fat/sugar free options.

Aim to include dairy/ alternatives 2-3 times daily. Choose lower fat versions such as semi skimmed milk or soya milk and yogurt alternatives.

Trimmer waists for better health

Women: A healthy waist circumference should be **no more than 32" (80cm).** Over 35" (88cm) increases your health risk significantly.

Men: A healthy waist circumference should be **no more than 37" (94cm).** Over 40" (102 cm) increases your health risk significantly.

Appendix 5

3 Mesnes St, Wigan, WN1 1QP Tel:01942826757 Email: wigan@cellys.co.uk

20/02/2010

Dear Ms Bozkurt,

I am giving you permission to carry out your study in my hair salon in Wigan Town Centre. We will discuss the details when you arrive at the salon at a later date.

Regards

Eren Akyol.